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# CIVILIAN NUCLEAR WASTE PROGRAM

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## HEARING

BEFORE THE

## COMMITTEE ON
## ENERGY AND NATURAL RESOURCES
## UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON THE

DEPARTMENT OF ENERGY'S IMPLEMENTATION OF THE CIVILIAN NUCLEAR WASTE PROGRAM

MARCH 2, 1990

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# CONTENTS

## STATEMENTS

Page

Johnston, Hon. J. Bennett, U.S. Senator from Louisiana .......... 1

McClure, Hon. James A., U.S. Senator from Idaho .......... 3

Watkins, Hon. James A., Secretary, Department of Energy, accompanied by Samuel Rousso and Leo Duffy .......... 6

## APPENDIXES

### APPENDIX I

Responses to additional questions .......... 127

### APPENDIX II

Additional material submitted for the record .......... 143

# CIVILIAN NUCLEAR WASTE PROGRAM

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MARCH 2, 1990

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, DC.*

The committee met, pursuant to notice, at 9:30 a.m., in room SD-366, Hon. J. Bennett Johnston, chairman, presiding.

## OPENING STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The CHAIRMAN. The hearing will come to order.

We want to welcome the distinguished Secretary of Energy this morning.

The purpose of today's hearing is to receive the status report from the Department of Energy on the Civilian Nuclear Waste Program. A month ago, this committee held a confirmation hearing on the nomination of John Bartlett to be director of this program. That nomination is now pending before the Senate, and I hope we will confirm Mr. Bartlett quickly.

The Nuclear Waste Program is one of the most important programs within the Department of Energy. Safe disposal of nuclear waste is one of the most important issues facing this country. There is simply no alternative to a successful nuclear waste program.

We have over 100 nuclear power plants around the country that produce nuclear waste. We will continue to produce nuclear waste for as long as we want to obtain the electricity from those plants. The waste is not going to go away. Therefore, we must develop a repository in which to place this waste once and for all—safely and permanently—and I might add, with dispatch.

This committee has been at the forefront of nuclear waste issues for a long time. We are very interested in the success of this program. We will do our best to ensure that success.

I am concerned that we have wasted too much time and too many resources so far on nothing but paper studies. We have yet to get on-site at Yucca Mountain. We have yet to sink a shaft at Yucca Mountain, yet we have spent over $2 billion since this program has started.

We are never going to find out whether or not the Yucca Mountain site is suitable until we sink that shaft. We must get on with the technical field studies on-site. We cannot continue simply to speculate on what we might or might not find there. We need to get the necessary plans in place and start the technical studies.

The attitude of many people toward the issue of nuclear waste has been to take the path of least resistance—do not step on anybody's toes, and do not make any controversial decisions. That has been the attitude for too long. It is time to start making some of those controversial decisions. We cannot continue to spend millions of dollars each year unless we are going to use that money to take decisive action.

I am encouraged by Admiral Watkins' commitment to move decisively with the Nuclear Waste Program. The Admiral has taken a series of initiatives since he came to the Department to put this program on solid footing.

The Department took an important step in initiating litigation against the State of Nevada in order to obtain access to the Yucca Mountain site.

The next step is to be ready to begin site work, so I am anxious to hear from Admiral Watkins on his efforts to put this program on track so that the site work can be initiated as soon as the Department obtains access to the site.

The Admiral has taken great strides at the Department in many areas, and I look forward to hearing from him about Yucca Mountain.

I might add, Admiral, that I have spent some time with Mr. Bartlett. I am impressed with his background and have endorsed his nomination. My advice to him was that you cannot be popular in that job. If you do the job that needs to be done, you have got to get on with it.

You cannot be popular in the jobs that Senator McClure and I hold, at least not with everybody. Two of the Senators for whom I have the greatest respect and affection and regard are the Senators from Nevada. They cannot be friendly toward nuclear waste, because their people do not support it. But what we have to do is do the right thing and do it now, and do it quickly.

One of my concerns is that the delay in this program has, and will continue, to result in lower funding for nuclear waste, so that by the time we are ready to scale up funding that it will have to come from some other program.

We have this process called the 302(b) allocation program among subcommittees. So that the Energy and Water Subcommittee gets its 302(b) allocation—its share of the total funding in the Appropriations Committee. With nuclear waste going down in funding because of the inability to sink a shaft. When we get ready, finally, to sink that shaft, then the increased money will have to come from somewhere.

Oh, to be sure, there is a fund, but for the purpose of 302(b) the fund does not make any difference. You still have to appropriate it out of the 302(b). What this means is that the time becomes ever more of the essence. The more time that passes without sinking the shaft, the lower the funding is going to be, and the more difficult the scale-up is going to be.

I know you are aware of this, but you will recall, when you first testified here, Senator McClure and I both told you about how frustrated we were about the program, and we still have to get it off the ground.

Senator McClure.

## STATEMENT OF HON. JAMES A. McCLURE, U.S. SENATOR FROM IDAHO

Senator McCLURE. Thank you very much. I will not take much time, because I will just say amen to everything that you have said, and to add my commendation to what you have already made of what we see happening in the Department today.

I do want to focus for just a moment, however, on one thing you did not mention, although I know of your interest in it. I am heartened with the 60-day report that we will be discussing this morning in that it reflects your determination, Mr. Secretary, to press ahead with this very important task. But, more importantly, it describes the direction that you are taking with respect to that program in supporting activities that they must have sound scientific basis and will be carried out in such a way as to earn public confidence. Both of those points are essential.

I note the emphasis in the report on the need to delink the repository from the MRS Program. A recommendation was also made by the Monitored Retrievable Storage Review Commission. As DOE continues to experience roadblocks in its efforts to begin site characterization at Yucca Mountain, and as spent fuel continues to pile up at our civilian reactors, this senator believes now, as he did when we enacted the NWPA amendments, that construction of an MRS facility should not be tied to the selection of a permanent repository.

We have discussed that before, and we understand the difference of approach between this body and the other body in the Congress. It is time for us to recognize that, indeed, the MRS program is unnecessarily held hostage to the progress on the Yucca Mountain site.

Though we have lost much time since the enactment of the Nuclear Waste Policy Act in 1982, I concur with the statement in the report that the success of the civilian radioactive waste management program is critical to our ability to manage and dispose of nuclear waste safely and the reestablishment of confidence in the commercial nuclear energy option in the United States, and I would point out that need is becoming more urgent.

There is scarcely a day goes by that the Congress does not have some action in some committee dealing with the question of global warming. If, indeed, it is what most people now believe it to be, the development and the application of less polluting forms of energy production are going to be essential not just to this country but to the world's climate and the survival of many of the institutions and peoples that we are now concerned about worldwide.

Mr. Chairman, thank you again, and I would ask unanimous consent that my statement be placed in the record in full.

The CHAIRMAN. Without objection, that will be done.

[The statement of Senator McClure follows:]

# OPENING STATEMENT OF SENATOR McCLURE

## Hearing on DOE's Civilian Nuclear Waste Program

## March 2, 1990

I would like to commend Senator Johnston for scheduling this morning's hearing on DOE's Civilian Radioactive Waste Management Program. For too long we have failed to implement a solution to this critical environmental problem. I am pleased that Secretary Watkins is here, and look forward to his views and recommendations on how to get the civilian waste program moving forward.

Many times in the past I have said that the operation of a system to safely and permanently dispose of high-level radioactive waste and spent nuclear fuel is critical to the future of commercial nuclear power. After our long struggle to enact the Nuclear Waste Policy Act and the subsequent amendments to the Act in 1987, I anticipated that we could finally get on with the task of responsibly disposing of these wastes. Unfortunately, my optimism has been transformed into frustration with the program's many delays, management problems, and legal battles, as well as with people with narrow vested interests seeking to obstruct this critical national effort.

I am heartened, however, that the 60-day report we will be discussing this morning reflects Secretary Watkins' commitment to pressing ahead with this most important endeavor. More importantly, it describes his direction that the program and supporting activities have sound scientific basis and will be carried out in such a way as to earn public confidence.

I note the emphasis in the report on the need to "delink" the repository from the MRS program, a recommendation also made by the Monitored Retrievable Storage Review Commission. As DOE continues to experience roadblocks in its efforts to begin site characterization at Yucca Mountain, and as spent fuel continues to pile up at our civilian reactors, this Senator believes now, as he did when we enacted the NWPA amendments, that construction of an MRS facility should not be tied to the selection of a permanent repository.

Though we have lost much time since enactment of the Nuclear Waste Policy Act in 1982, I concur with the statement in the report that the success of the Civilian Radioactive Waste Management Program is critical to our ability to manage and dispose of nuclear waste safely and to the reestablishment of confidence in the commercial nuclear energy option in the United States. I look forward to supporting Secretary Watkins and Dr. Bartlett in their efforts to get the program back on track.

The CHAIRMAN. Welcome, Admiral.

## STATEMENT OF HON. JAMES D. WATKINS, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY SAMUEL ROUSSO, ACTING DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT; AND LEO DUFFY, DIRECTOR, ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT OFFICE

Secretary WATKINS. Thank you very much, Mr. Chairman and members of the committee. I am honored and pleased to appear before you today to discuss the status and the restructuring the Department of Energy's Civilian Radioactive Waste Management Program.

I have with me today at the table on my right Mr. Sam Rousso, the Acting Director of the Office of Civilian Radioactive Waste Management Program, and on my left, Mr. Leo Duffy, the Director of my Environmental Restoration and Waste Management Office.

Today, I would like to discuss several initiatives I have taken that center on management restructuring for the program, moving ahead with scientific investigations at the Yucca Mountain Characterization Site and establishing interim storage capability for spent nuclear fuel.

These initiatives, which I first presented in late November 1989 in a report to Congress on Reassessment of the Civilian Radioactive Waste Management Program, that you earlier referred to as the 60-day report, are designed to provide the framework for a reasonable chance of success in carrying out the requirements of the Nuclear Waste Policy Act of 1982 as amended in 1987. They are discussed in my detailed statement, which I would like to submit for the record, and I would like at this time to give a brief overview of that more detailed statement.

By way of background, when I became Secretary of Energy, I made a number of commitments with regard to nuclear waste management and protection of public health, safety, and environment. I promised to develop a plan for environmental restoration of DOE's nuclear-related waste sites, for compliance with applicable regulations, to address the issues surrounding the opening of the Waste Isolation Pilot Plant WIPP in New Mexico, and to restructure the Civilian Radioactive Waste Management Program. I have moved ahead on all of these commitments.

With regard to the Civilian Waste Program, I heard claims from a variety of sources, including Members of Congress, that the program was plagued with mismanagement, had set and was operating under unrealistic schedules, had not made efforts to work with affected and interested parties, and was trying to cram the repository down the throat of the state of Nevada.

It seemed clear that there was little, if any, public confidence with regard to DOE's progress and ability to properly carry out implementation of the NWPA as amended. These claims caused me deep concern and made me committed to restoring credibility to the program.

I made an early determination that I must undertake my own assessment of all DOE programs, including the civilian waste program, in order to come up with an adequate baseline of information. One with which I could make informed judgments. I was determined that I would not be driven by any previously-set schedules or management decisions which did not address the continuing or emerging obstacles and issues, or were not based on sound technical studies, complete reviews, adequacy of public confidence and good fiscal management.

In fact, I remember testifying, I believe to you Mr. Chairman, that the reason I had not taken more aggressive action earlier to push ahead with court cases as required, was that I believed my own program was faulty and I had to reassess that program and reestablish it before I could take those tough actions. Without such action I would find myself and DOE in the middle of a controversy that I was going to lose. This is why I had to go back and start all over again. I will talk a little bit more about the integrated management plan in a minute.

As a result of these initial observations, several months ago, I conducted a comprehensive review of the civilian waste program to establish a management baseline against which I could measure progress towards implementing the will of Congress. Based on that review, I concluded that the program could not be executed in its current form. A number of actions have been taken to rectify the problems.

I have outlined these detailed actions in my formal report to the committee today, but I would like to summarize a few of the highlights.

Clearly, the program needed a permanent director. The President nominated Mr. Bartlett to be the director of the Civilian Nuclear Waste Program. As you pointed out, he is highly qualified to carry out the difficult task of developing a waste disposal system.

Mr. Chairman, I am pleased that this committee supported his confirmation expeditiously, and I would like to ask your assistance in expediting the remainder of the confirmation process by the entire Senate.

Secondly, the program clearly needed to establish realistic and achievable schedules. A chronic problem with the Office of Civilian Radioactive Waste Management Program has been schedule delays and uncertainties. Some of these delays have been of the programs own making, primarily driven by being overly optimistic, without essential program underpinnings.

There has been a clear need for establishing a schedule that has some degree of achievability, and incorporates external concerns, outside participation, decisionmaking and obstacles, and allows for contingencies based on external and internal actions.

Such a schedule did not exist when I became Secretary one year ago.

Today, in this room, I want to display the charts which indicate our near-term schedule, that is, for the forthcoming year, or until January 1991.

The next schedule is what I would call the mid-term schedule, which takes us out to 2001. The bottom chart is the overall schedule, which takes us from today through the year 2010.

I have passed out copies of these charts to you on the dias.

I do not want to go over these charts in great detail. However, I think it is very important we all recognize that there are about 30 specific line items that must be fully integrated in this plan.

As indicated on the larger top plan, the near-term for the next year, you will see these laid out: those decisions we currently face, some of which are driven by external circumstances almost beyond my control, and others which are internal to the Department.

Then the chart addresses activities at the Yucca Mountain site in terms of external events that must be reconciled, along with those over which I have internal controls the total repository program, and then the issue of monitored retrievable storage.

These were laid out in detail, and were integrated to show the relationships between these various 30 events that have to take place, put in perspective, we simply had to come to grips with reality on the variety of dates.

We also had to take into account what was going on in litigation between the Department of Energy and the State of Nevada. This is all done in this chart, and I will talk about it very briefly here.

The CHAIRMAN. Let me ask you while you are on the subject here. I see Yucca Mountain, obtain site access. It looks like about New Year Day, 1991.

Secretary WATKINS. Yes, that is correct, Mr. Chairman.

The CHAIRMAN. Is that how long do you think it will take to get the litigation——

Secretary WATKINS. I will address that in a minute.

This is based on the fact that we are now in litigation with two suits. One is in the Ninth Circuit Court in San Francisco, the suit of *Nevada* v. *Watkins;* and the other is the *Department of Energy* v. *Nevada,* in the Federal district court in Nevada, suing them for failure to issue the permits to us.

Those two suits are underway. We have a time schedule, which I can talk about a little later, as to how those are progressing.

The CHAIRMAN. Yes, we wish you would.

Secretary WATKINS. We have allowed, this year, which still permits, if everything goes well, us to achieve the 1998 MRS opening, and also to achieve the 2010 opening of the repository, if the site proves acceptable.

That is the reason for the January 1991 date. So that we do not keep stumbling over ourselves in our inability to somehow get that first permit to start the surface testing, and ultimately the shaft.

The CHAIRMAN. Let me ask you this while we are on it. I do not mean to interrupt your presentation, but do you expect to have all issues resolved, and if the court decides as you wish, will it give you full access to the site for the shaft at the time you get your decision?

Secretary WATKINS. We are ready to go right away.

What you see on that first chart in green, everything left of the line dated 1 March, which is the vertical line down through that top chart, is completed.

We have done everything that we can do, to date, to get on with the task. Everything else is geared to January 1991 commencement of the first surface work out there. The air permit is still pending.

The CHAIRMAN. Of the surface work?

Secretary WATKINS. Right. Yes, sir.

And that is integrated later on, as you know, with the shaft itself.

The **Chairman**. Now, if you are successful in your litigation, when would you be able to commence digging the shaft?

Secretary **Watkins**. 1992 is the date to begin on the shaft, sir.

The **Chairman**. And let us suppose there were no problems with permits, when, then, would you be able to do the shaft?

Mr. **Duffy**. We would start the shaft in 1992.

The **Chairman**. Not before?

Secretary **Watkins**. No, sir.

The **Chairman**. In other words, the beginning of the shaft is not now held up by any litigation?

Mr. **Duffy**. No, sir.

Secretary **Watkins**. No, sir.

Mr. **Duffy**. The Technical Review Board gave comments on alternatives to the methodology that is planned by the Department, for the two exploratory shafts. They recommended a horizontal ramp, and then a reverse bored shaft. We are reviewing that. The review will be completed in August, and then we will go on to Title II of the shaft.

The **Chairman**. Excuse the interruption.

Secretary **Watkins**. As a related matter, the new schedule for the MRS facility assumes that a site would be obtained by identifying a volunteer host, preferably through the work of the Nuclear Waste Negotiator.

In addition, the schedule assumes that the linkages between the MRS facility and the repository, which are contained in the Nuclear Waste Policy Amendments Act, would be modified, either independently or as a result of Negotiator-proposed initiatives.

In this regard, it is my understanding that the White House has selected the Negotiator, and he is currently going through the review process, before being nominated.

We have had an aggressive recruiting program in the White House for the Negotiator. We failed on the first one; we believed we had a Negotiator, but it took a long time to determine that he was not willing to take the job under the circumstances, and we had to start over again.

This has delayed us but I believe that we have a superbly-qualified individual. Hopefully the process of his review will be completed shortly, and the White House will be able to nominate him.

Under these assumptions, it is estimated that waste acceptance could begin at the MRS site on a limited basis as early as January 1998, and full operations could begin in the year 2000.

In the meantime, we believe surface-based tests will be an important part of the scientific investigations at the Yucca Mountain Characterization Site.

These tests will focus on potentially adverse conditions in the context of the total system performance and on efforts to evaluate key suitability issues early in the site investigation process.

This testing from the surface will allow DOE to evaluate the suggestions of the Nuclear Waste Technical Review Board, and the Nuclear Regulatory Commission, relative to the design of the exploratory shaft facility, prior to beginning underground investigations.

We believe that both surface-based and underground in-situ tests, combined with the continuing evaluation of the data as it is obtained to assess the performance of the site, is both a cost-effective and a timely way in which to conduct scientific investigations.

It is anticipated that these surface-based tests will begin in January 1991, and if no unsuitable conditions are found as a result of this testing, exploratory shaft construction would begin in late 1992, as we stated.

However, I want to note that we are currently looking at ways to accelerate that schedule. Surface-based tests are very important and will continue throughout underground in-situ testing. The full spectrum of information provided by both surface-based and underground in-situ tests will demonstrate whether the site is suitable or unsuitable, and provide the basis for repository design if the site is in fact found suitable.

It is clear that no matter how the program is restructured or redirected, the Yucca Mountain scientific investigation project and schedule cannot proceed unless we can begin site characterization studies. We cannot begin these scientific studies until we obtain the required permits to begin the tests at Yucca Mountain.

I have stated on many occasions that the preferred way in which I would like to do business is in a cooperative manner with the affected parties. I have tried to establish cooperative relations with the State of Nevada and shall continue to do so.

We would like to proceed with the state scientists working with us, for example.

I would like to indicate what my efforts have been to date, Mr. Chairman.

Last spring I granted the Governor's request to extend the public comment period on the site characterization plan. I met with the Governor and exchanged correspondence, wherein we agreed to work together in an open manner and to address respective concerns.

I met with the Nevada congressional delegation to try to establish cooperation. I agreed to semiannual public hearings to keep the Nevada public informed.

In fact, the next set of meetings will be held in late March and early April.

Then, 2 weeks ago we opened a second public information office located in Las Vegas to help keep the public informed, and to address their questions. As a matter of fact, DOE has provided over $40 million in grant funds to the State over the past 7 years, including $5 million already this year.

I really do believe we have put our best foot forward.

But, while we have a Federal law that says, characterize the site, other current Federal laws require State permits to do the work. Additionally Nevada has passed a State law that has resulted in the State's returning and not processing our permit applications.

We submitted two applications for permits in 1988, and two in 1989. They have all been returned.

In late December, after holding DOE's permit applications, one for more than 2 years, the State of Nevada returned the applications to DOE unprocessed. On January 5, 1990, they filed suit against the Department of Energy, charging that the State had effectively vetoed the repository siting program.

On January 25, 1990, at my request, the Department of Justice, now with a firm plan in hand, filed a lawsuit against the State. The suit asks for a court order that would stop the State from impeding the scientific study called for by Congress to determine whether Yucca Mountain would be a suitable site for development of a repository.

The State has refused to cooperate. DOE, therefore, has no alternative but to turn to the Federal courts to break this logjam, so that we can carry out the will of Congress.

Based on the recent examination of the schedule for development of the repository, and allowing the time necessary for sound scientific investigation and design, it is clear that DOE cannot meet the target date to begin receiving spent fuel in 1998, even at the MRS facility, because of the current linkages in the amendments act.

I have directed the Office of Civilian Radioactive Waste Management to discuss with Congress the possibility of modifying the linkages currently existing in the law, that link MRS facility decisions with the repository decisions, and to continue to study a variety of options which could enable DOE to achieve early acceptance of spent fuel.

The third item that I took on, was the fact that the program needed to be organized and managed so that the goals and schedules have a reasonable chance of success. I requested an independent management review of the Office's management structure and contractual arrangements.

This review included organizational structure and authority, responsibilities and accountability of DOE personnel. It has been completed and I have received the report and recommendations.

I expect a decision will be made soon about the reorganizational realignment of the program. However, I think it is important for the new Director to participate in these decisions, and therefore, I have decided to leave final organizational decisions for him to decide.

In the meantime, I have effected one major organizational change. I have established direct-line reporting of the DOE Yucca Mountain Project Office to the Office of Civilian Radioactive Waste Management at headquarters. This direct line reporting is consistent with all other departmental changes I have made to more clearly define accountability and responsibility of DOE and field leadership on every project.

This was needed, not only to enhance and enforce accountability, but also to overcome dysfunctional and duplicative approaches to project management.

The program also needed its resources directed and allocated commensurate with the responsibilities and the work to be done. With regard to contractor support, an internal review is currently underway. Some adjustments have been made, but final decisions will await the new Director.

In the meantime, I know this subject is also of great interest to the chairman, and we have provided some preliminary data to you. We will follow up with more details.

I also found that the program needed to get serious about efforts to gain public confidence and public understanding of the issues. It needed to take action to address issues to ensure that informed decisions could be made today and in the future regarding protection of public health, safety and the environment.

The successful development of our Nation's nuclear waste management system is not only contingent upon technical suitability and design of the components; it also is contingent upon achieving public confidence. To have any hope for success, skills, knowledge and understanding must be enhanced.

I have therefore directed the Civilian Waste Program to establish a strong public involvement in an education program designed to increase knowledge, participation and skills within the education and public communities.

The purpose of such a program is to promote public understanding and public confidence through involvement in education so that the youth of today who will be our managers, scientists, decisionmakers; and waste management workers of tomorrow can make more informed decisions and implement and operate important waste management systems throughout the country.

Mr. Chairman, this concludes my informal remarks this morning, and I would be happy to answer any questions that you may have.

[The prepared statement of Secretary Watkins follows:]

# STATEMENT OF
# JAMES D. WATKINS, ADMIRAL, U.S. NAVY (RETIRED)
# SECRETARY OF ENERGY

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

MARCH 2, 1990

Mr. Chairman and Members of the Committee:

I am pleased to appear before you today to discuss the status and restructuring of the U.S. Department of Energy's (DOE) Civilian Radioactive Waste Management Program.

Today, I would like to discuss initiatives that center on management restructuring for the Office of Civilian Radioactive Waste Management (OCRWM), initiatives to continue scientific investigations at the Yucca Mountain characterization site, and initiatives to establish interim storage for spent fuel.

The initiatives, presented in late November 1989 in a Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program (60-Day Report), are designed to provide the framework for a reasonable chance of success in carrying out the requirements of the Nuclear Waste Policy Act of 1982 (NWPA), as amended.

When I became Secretary of Energy, I heard claims from a variety of sources, including Members of Congress, that the Civilian Radioactive Waste Management Program was plagued with mismanagement, had set and was operated under unrealistic schedules, had not made efforts to work with affected and interested parties, and was trying to "cram the repository" down the throat of Nevada. It seemed clear that there was little, if any, public confidence with regard to DOE's progress and ability to properly carry out implementation of the NWPA, as amended.

These claims caused me deep concern and made me committed to restoring credibility to the program.

I made an early determination that I must undertake my own assessment of all DOE programs, including the Civilian Radioactive Waste Management Program, in order to come up with an adequate baseline of information, one with which I can make informed judgments. I was determined that I would not be driven by any previously set schedules or management decisions which did not address the continuing or emerging obstacles and issues or were not based on sound technical studies, complete reviews, adequacy of public confidence and good fiscal management.

As a result of these initial observations, several months ago I conducted a comprehensive review of the Civilian Radioactive Waste Management Program. This review included schedules, plans, policies, organizational structure, interactions with the State of Nevada and the public and, finally, contractor roles and support. Its purpose was to establish a management baseline to allow me to measure progress toward implementing the NWPA, as amended. The initial results and initiatives are discussed in the November 1989 report cited earlier.

By way of background, in March 1989, after becoming Secretary of Energy, I made a number of commitments with regard to nuclear waste management and protection of the public health, safety and environment. I promised to develop a plan for environmental restoration of DOE's nuclear-related waste sites and for compliance with applicable regulations, to address the issues surrounding the opening of the Waste Isolation Pilot Plant, and to restructure the Civilian Radioactive Waste Management Program.

In June 1989, I announced a series of 10 initiatives to strengthen environmental protection and waste management activities at DOE's production, research and testing facilities. These initiatives are intended to chart a new course -- set a new culture -- to lead the Department toward full accountability in the areas of environment, safety and health.

In August 1989, I issued the Environmental Restoration and Waste Management Five-Year Plan as the directive document for development of specific implementation plans by the Department's eight field Operations Offices. These implementation plans will be formulated with the participation of appropriate State and regional authorities, as indicated in both the Five-Year Plan and my 10-point initiative.

In October 1989, I testified before this Committee that the management plan for opening DOE's Waste Isolation Pilot Plant near Carlsbad, New Mexico, is a top priority and is essential to national security. I stated that only after completing the blueprint for opening the WIPP facility would I then turn my focus to restructuring the Civilian Radioactive Waste Management Program.

In November 1989, I issued the WIPP plan and also completed an extensive review of the Civilian Radioactive Waste Management Program. I concluded that the program is not executable in its current form.

The results of that review brought me to the following conclusions:

- The program needs a permanent Director.
- It needs to establish realistic and achievable goals and schedules.
- It needs to be organized in a way which combines responsibilities, authority, and accountability so that these goals and schedules have a reasonable chance of success.
- Resources must be directed and allocated commensurate with the responsibilities and the work to be done.
- Public confidence and public understanding of the issues, problems and actions required to address these issues are lacking and sorely needed to ensure that informed decisions are made today and in the future regarding the protection of the public health, safety and environment.

Based on these conclusions, I implemented initiatives for the Civilian Radioactive Waste Management Program to:

- Strengthen efforts for getting a permanent OCRWM Director through the nomination by the President and speedy confirmation by the Senate and for acquiring qualified personnel with relevant technical management and licensing experience for this major first-of-a-kind geologic repository licensing process.
- Initiate an independent management review of the OCRWM program, for the purpose of establishing a new management structure. This includes the establishment of direct line reporting of the Yucca Mountain Project Office in Nevada to OCRWM; review and implementation of contractor support to match the changing needs of the

program and to eliminate overlapping or duplicative responsibilities; and streamlining interactions with the Nuclear Regulatory Commission.

- Reassess program goals, plans and activities to establish a realistic program schedule based on sound scientific data and principles.

- Refocus site characterization studies on potentially adverse conditions and to evaluate key suitability issues early by conducting surface-based testing and deferring exploratory shaft construction for three years.

- Request the Department of Justice to file suit against the State of Nevada to acquire environmental permits so that the Federal law to characterize the site can be carried out.

- Accelerate DOE review of the MRS Review Commission Report to Congress to take advantage of the insights represented therein and to consider options for integrating their findings into the waste management system. In this connection, DOE will look at options such as seeking modification of the linkages between MRS and repository decision points currently in the law. In addition, DOE will initiate interactions with cognizant parties to identify options for early acceptance of spent fuel.

- Increase efforts to support the Presidential appointment and Senate confirmation of a Nuclear Waste Negotiator. The authority of the Negotiator under the Nuclear Waste Policy Amendments Act of 1987 includes seeking to enter into negotiations on behalf of the United States Government with the Governor of any State (or the governing body of an Indian Tribe on whose reservation) in which a potential repository is located or who offers a technically qualified site for an MRS facility.

- Reassess the objectives and pace of the activities related to development of the OCRWM transportation system to ensure that plans and activities are fully integrated with the other program plans and will not present obstacles to the design and implementation of other elements of the waste management system.

- Establish a strong public involvement and education program designed to increase knowledge, participation and skills within the education and public communities to promote public understanding and public confidence and to increase science literacy for today's youth and tomorrow's decisionmakers and waste management workers.

In developing and implementing these initiatives, DOE will encourage experts from academia, government and industry, the National Academy of Sciences, the State of Nevada, the Nuclear Waste Technical Review Board, the U. S. Nuclear Regulatory Commission, the U. S. Environmental Protection Agency, the U. S. Geological Survey, and other affected and interested parties to review current plans and those resulting from the initiatives listed above.

Many of the activities associated with these initiatives have already begun and are discussed in the "60-Day Report."

## PERMANENT DIRECTOR

A key force in the successful implementation and completion of the initiatives described above is the emplacement of a permanent Director of the Civilian Radioactive Waste Management Program. It will be the actions of this permanent Director, nominated by the President and confirmed by the Senate, that will provide the essential leadership for successfully designing and carrying out this scientific, yet highly misunderstood, and politically visible program. The program has been led by an Acting Director for more than two years. An "Acting Director"--no matter how experienced or qualified--cannot assume and cannot fully and successfully carry out the responsibilities of such a position. I, therefore, have sought qualified candidates to fill this important, critical position. I am pleased that the President has nominated Dr. John W. Bartlett for the position and that his confirmation hearing has been held. I believe he is highly qualified to carry out the difficult tasks of developing a waste disposal system. I am pleased that this Committee supports his confirmation.

## INDEPENDENT MANAGEMENT REVIEW

As I previously mentioned, one of my first actions was to request an independent management review of OCRWM's management structure and processes, systems, and contractual arrangements. This review included organizational structure and authority, responsibilities and accountability of DOE personnel.

The firm of Booz, Allen and Hamilton was asked to conduct this management review. The review has been completed and I have received their report and recommendations. I expect a decision will be made soon about the organizational realignment of the program. However, I think it is important for the new Director to participate in these decisions and, therefore, I have decided to leave final organizational decisions for him to make. In the meantime, I have already effected one major organizational change: I have established direct-line reporting of the DOE Yucca Mountain Project Office to OCRWM. Previously, the Yucca Mountain Project Office reported to the DOE Nevada Operations Office Manager, who reported to the Under Secretary, and program guidance was provided by the OCRWM Director. Now, the Project Office will report and be accountable directly to OCRWM.

This direct line reporting is consistent with other departmental changes I have made to more clearly define responsibilities and authorities, to enhance and enforce accountability and to correct dysfunctional and duplicative approaches to program management.

With regard to contractor support, an internal review is currently underway. Some adjustments have been made, but final decisions will await the new Director.

PROGRAM SCHEDULE

A chronic problem with the OCRWM program has been schedule delays and uncertainties. Some of these delays have been of the program's own making. For example, in an attempt to be "optimistic," the program has, in the past, put together and issued schedules which assume compliance with or adherence to DOE's schedules by external parties over which DOE virtually has no control. While I admire optimism, DOE does not have unilateral control over all actions and decisions associated with implementing the Nuclear Waste Policy Act. There is clearly a need for establishing a schedule that (1) has some degree of achievability, and (2) incorporates external concerns, participation, decisions and obstacles as well as contingencies based on external and internal actions.

As reflected in the 60-Day Report in late November, I completed an evaluation of the overall OCRWM program schedule, including the schedule for scientific investigations at Yucca Mountain, the development of a Monitored Retrievable Storage (MRS) Facility, and activities associated with transportation system program elements. The focus of this detailed schedule review was on activities and a realistic assessment of their duration along the critical path or near-critical path. The results of the review are summarized in the Reference Schedule for Restructured Program, which was contained in the Report and is attached as Figure 1.

In parallel with providing the Report to Congress, I requested comments from the waste program participants and affected and interested parties on this schedule, as well as the other schedules issued with the Report. We are reviewing those comments now, although most of the comments did not focus on schedule changes.

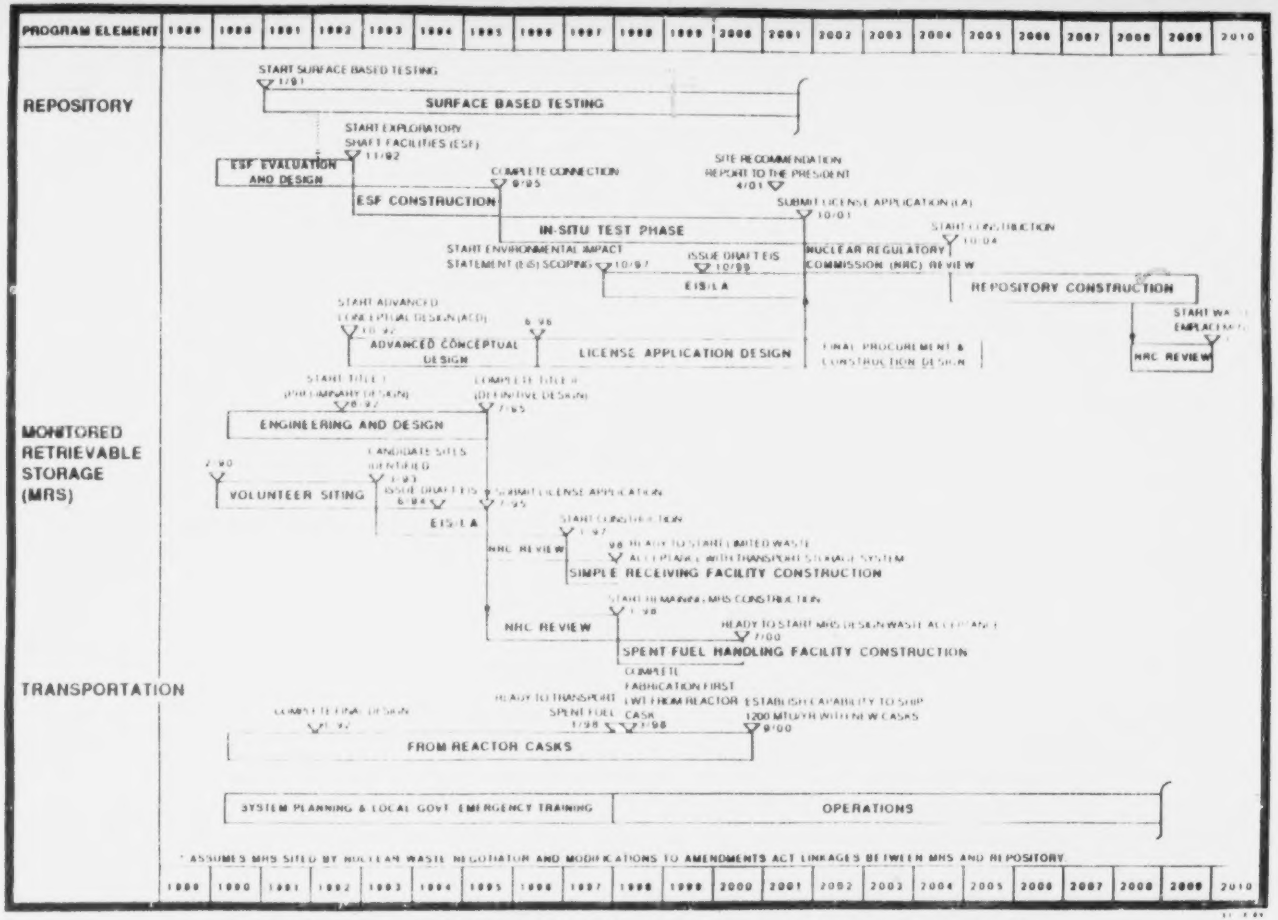
Repository Schedule

Briefly, the repository schedule shows a significant delay from 2003 to 2010 for start of repository operations. Since certain activities are beyond DOE's control, as discussed earlier, assumptions for milestones were required. For example, a primary assumption was the date for obtaining access, including applicable permits, to the Yucca Mountain characterization site to allow scientific investigations to begin.

Based on the options which I will discuss shortly for obtaining the necessary permits to begin site characterization at Yucca Mountain, it is assumed that new scientific investigations at the Yucca Mountain characterization site will begin in January 1991.

MRS Schedule

The new schedule for the MRS facility assumes that a site would be obtained by identifying a volunteer host and preferably through the work of the Nuclear Waste Negotiator. In addition, the schedule assumes that the linkages between the MRS facility and the repository which are contained in the Nuclear Waste



a ASSUMES MRS SITED BY NUCLEAR WASTE NEGOTIATOR AND MODIFICATIONS TO AMENDMENTS ACT LINKAGES BETWEEN MRS AND REPOSITORY.

FIGURE 1. REFERENCE SCHEDULE FOR RESTRUCTURED PROGRAM [a]

Policy Amendments Act would be modified -- either independent of or as a result of Negotiator-proposed initiatives.

Under these assumptions, it is estimated that waste acceptance could begin at an MRS site, on a limited basis, as early as January 1998; and full operations could begin in the year 2000.

I would like to note, however, that if a volunteer host for an MRS facility is not identified and a site must instead be selected through a DOE-siting process, it is estimated that at least two more years would be added to the schedule -- resulting in a 2002 start-up for the basic MRS facility. Even this later date assumes that linkages would be modified. If linkages defined in the Amendments Act are not modified, it is estimated that the earliest an MRS facility could begin basic operations would be 2007.

## SURFACE-BASED TESTING

DOE had originally planned to begin exploratory shaft site preparation work in May 1989 and begin construction of the first of two exploratory shafts in November 1989. However, consistent with comments received from the State of Nevada, the Edison Electric Institute and others, we now plan first to begin surface-based tests (i.e., trenches and deep exploratory drill holes up to 3,000 feet deep) -- assuming the Courts or the State will allow DOE to proceed with the tests.

Surface-based tests, we believe, will be an important part of the scientific investigations in that they will focus on potentially adverse conditions in the context of total system performance and on efforts to evaluate key suitability issues early in the site investigation process. This will also allow DOE to evaluate the suggestions of the Nuclear Waste Technical Review Board and the Nuclear Regulatory Commission relative to the design of the exploratory shaft facility prior to beginning underground investigations. We believe that both surface-based and underground in situ tests, combined with continuing evaluation of the data as it is obtained to assess the performance of the site, is a cost-effective and timely way in which to conduct scientific investigations.

It is anticipated that these surface-based tests will begin in January 1991, and if no unsuitable conditions are found as a result of this testing, exploratory shaft construction would begin in late 1992. It is important to point out that surface-based tests alone may not confirm suitability, but may determine unsuitability. It is important that we know at the earliest possible date if the site is unsuitable. Underground tests will be used to confirm and extend surface-based test results. The full spectrum of information provided by both surface-based and underground in situ tests will demonstrate whether the site is suitable or unsuitable, and provide the basis for repository design if the site is found suitable.

For each test that will be conducted on site, a study plan will be developed. These study plans will be approved by the DOE and reviewed by the NRC prior to the initiation of any new site work. To date, 33 such study plans have been submitted for

DOE approval, and 8 of these have been forwarded to the NRC for review. A number of other study plans are in preparation. In total, there may be more than 100 study plans required to conduct site characterization work.

As stated earlier, DOE currently cannot proceed with this surface-based testing without State permits, so we must proceed with actions to obtain the permits to do these tests and get on with site characterization, as directed by Federal law.

## PLAN FOR BEGINNING SURFACE-BASED SCIENTIFIC INVESTIGATIONS AT YUCCA MOUNTAIN

It is quite clear that no matter how the program is restructured or redirected, the Yucca Mountain scientific investigation project and schedule cannot proceed unless we can begin site characterization studies. We cannot begin these scientific studies until we obtain the required permits to begin the tests at Yucca Mountain.

I have stated on many occasions that the preferred way in which I would like to do business is in a cooperative manner with the affected parties. I have tried to establish cooperative relations with the State of Nevada and shall continue to do so. In fact, I would say that the determination to do surface-based testing first is in large part consistent with recommendations made by the State of Nevada. We would like to proceed with the State's scientists working with us.

To ensure that we can obtain the required permits and can proceed with site investigations at Yucca Mountain, as Federal law has directed us, in November I directed that a two-pronged strategy be implemented.

(1) I asked the Department of Justice to review our legal options and to prepare litigation against the State of Nevada. Litigation is time consuming and costly, but we have a Federal law that says characterize the site, other current Federal laws that require State permits to do the work, and a State law that has resulted in the State's returning and not processing the permit applications.

In late December 1989, after holding DOE's permit applications (one for more than two years), the State of Nevada returned the applications to DOE, unprocessed and on January 5, 1990, filed suit against the DOE, charging that the State had effectively vetoed the repository-siting program. On January 25, 1990, at DOE's request, the Department of Justice filed a lawsuit against the State. The suit asks for a court order that would stop the State from impeding the scientific study called for by Congress to determine whether Yucca Mountain would be a suitable site for development of a repository.

Cooperation and direct negotiation with the State is the preferred approach to proceeding with these Congressionally mandated scientific investigations, but the State has refused to cooperate. DOE, therefore, has no alternative but to turn to the Federal courts to break this logjam so that we can carry out the will of Congress.

(2) When a Negotiator is appointed -- and I still hope it is very soon -- DOE is prepared to support initiatives developed

by the Negotiator that would expedite processing of environmental permits necessary to begin scientific investigations at the Yucca Mountain characterization site. Realistically speaking, because Yucca Mountain could be found unsuitable, DOE would also support the Negotiator in efforts to identify alternative volunteer repository sites.

### QUALITY ASSURANCE PROGRAM

The Nuclear Regulatory Commission requires OCRWM to develop a fully qualified quality assurance program to control information acquired during site investigation for use in licensing. During the last 2 years, OCRWM has placed a strong emphasis on developing and implementing a coherent quality assurance program. In fact, OCRWM has committed to having NRC acceptance of its quality assurance program by September 1990. Working under the guidance of the Office of Quality Assurance, OCRWM has scheduled a quality assurance audit to be conducted this summer. A program review was held earlier this month to evaluate the program's progress in preparation for the audit.

### REVIEW OF MRS REVIEW COMMISSION REPORT TO CONGRESS

The primary objective of the Civilian Radioactive Waste Management Program is to develop a licensed geologic repository for the permanent disposal of spent fuel and high-level radioactive waste. The Department also has an obligation to accept spent fuel from utilities on a timely basis as mandated by the Nuclear Waste Policy Act, as amended.

Based on the recent examination of the schedule for development of the repository and allowing the time necessary for sound scientific investigation and design, it is clear that DOE cannot meet the target date to begin receiving spent fuel in 1998 even at an MRS facility because of the current linkages in the Amendments Act.

I have directed OCRWM to accelerate the review of the MRS Review Commission's Report to Congress to take full advantage of of its insights; to discuss with Congress modifying the linkages currently existing in the law that link MRS facility decisions with repository decisions; and to continue to study a variety of options which could enable DOE to achieve early acceptance of spent fuel.

NEGOTIATOR

I have been in close contact with the White House to encourage the appointment by the President of a Nuclear Waste Negotiator. I believe the appointment of a Negotiator would provide valuable assistance in securing progress in the characterization studies and repository siting, as discussed earlier, and would be the preferred route for siting an MRS facility.

TRANSPORTATION SYSTEM

Without the equipment and infrastructure to move spent fuel from utilities, a waste system is of little use. It is important, therefore, that the components of a transportation system be developed and designed to meet the timing and design of a repository and an MRS facility.

It is equally as important that plans, designs, and activities associated with the transportation components be in phase with the rest of the program. In November 1989, I asked the OCRWM to reassess the objectives and pace of the activities related to the transportation system to see what, if any, adjustments need to be made. I expect to receive its recommended strategy shortly.

## SECRETARIAL BUDGET DISCRETION FOR AFFECTED PARTIES

The FY 1990 Energy and Water Development Appropriation Act (P.L. 101-101) and the accompanying Senate Appropriations Committee Report (Report 101-83), provided DOE with the authority to withhold a portion of the grant funds from the State of Nevada until good faith efforts by the State of Nevada to cooperate with DOE could be certified. I continue to support justified funding for oversight work commensurate with the work being done.

Just as I believe DOE does not need funds for work that cannot be done, I also believe that it would be a misuse of funds to provide money for oversight activities when there is little to "oversee."

## PUBLIC INVOLVEMENT AND EDUCATION PROGRAM

I view math and science education as now part of the primary mission of the Department of Energy. In addition, it is my goal to create within DOE a new "culture" based on openness and responsiveness to the public's justified scrutiny of our activities. There must be an open dialogue when addressing environmental, health and safety concerns. This is not only true in the day-to-day operations of DOE facilities, such as the weapons production facilities, but it is true in developing the waste disposal system required by the Nuclear Waste Policy Act of 1982, as amended. After all, a key objective of the Nuclear Waste Policy Act is to protect the public health, safety and environment.

Consistent with the commitment I have made relative to other programs in the Department, I am committed in the program to revitalize the internal culture and to eliminate the dysfunctional aspects of past activities and corporate posture. DOE must have clear and open communication, must listen to its critics, and must not contend that DOE has all the answers. The technical merits of the program must be impeccable, but external interfaces are essential. I am pleased to say that Dr. Bartlett, the OCRWM Director-Nominee, has outstanding technical credentials and experience and, in addition, he clearly holds this view.

The public has become increasingly frustrated with DOE's emphasis on technical facts and assumptions and not hearing, discussing and understanding public concerns. This is a scientific program and scientific investigation must prevail. But scientists are trained and skilled in technical responses to questions and issues. They are far less equipped to provide nontechnical responses or to deal with nontechnical issues. As a result, many times DOE and its scientists have come across as having a "trust me" attitude, which further angers the public.

The Nation has entered a new era -- one where the public wants and demands not only more environmental protection, but also more understandable information and involvement with plans and progress toward achieving protection of public health, safety and environment. As the public's servant and under the public's scrutiny, DOE must fulfill this mandate. In addition, today's world requires skilled environmental and waste managers. In fact, the demand for people with specialized skills in environmental and waste management disciplines has accelerated.

No detailed analysis of future human resource needs has been done, but experience has shown that some professionals are already in short supply, including hydrogeologists. College enrollments and degrees conferred in chemical engineering and geology have declined in recent years, yielding fewer new graduates for needed employment.

DOE can make an important contribution to solving this national problem. Initiatives which I have previously announced include the implementation in FY 1990 of new and enhanced DOE educational support programs focused on science literacy. These programs include programs to interest junior high and high school students in careers in science and engineering; programs to give students and teachers access to DOE facilities and experience; curriculum and scholarship support to junior colleges, colleges and universities; cooperative educational programs; and internships.

In this regard, the development of our Nation's nuclear waste management system is not only contingent upon technical suitability and design of the components, it also is contingent upon achieving public confidence. To have any hope for success, skills, knowledge and understanding must be enhanced. I have, therefore, directed the Civilian Radioactive Waste Management Program to establish a strong public involvement and education program designed to increase knowledge, participation and skills within the educational and public communities. The purpose of such a program is to promote public understanding and public confidence through involvement and education so that the youth of today who will be our managers, scientists, decisionmakers, and waste management workers of tomorrow, can make informed decisions and implement and operate important waste management systems.

## CONCLUSION

Implementing the measures I have discussed today will, I believe, provide the necessary framework to proceed with scientific investigations, gain public confidence in our ability to develop and manage this important national program of Civilian Radioactive Waste Management, and assume our proper role as a protector of the public health, safety and the environment.

**The Secretary of Energy**
Washington, DC 20585

MAR 1 1990

The Honorable J. Bennett Johnston
Chairman, Committee on Energy and
Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

In November 1989, I provided you the "Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program." That report documented the results of an extensive review that led me to conclude that the Program could not be effectively executed in its current form. The report further identified the initiation of a three-point action plan to promote the Department of Energy's ability to achieve its goals and milestones. These initiatives included restructuring the Program's management, actions to gain access to the Yucca Mountain site, and establishing monitored retrievable storage capability for early acceptance of spent fuel.

In the short time since the Department began implementing the three-point plan, significant progress has been made that will help get the Program back on track. A sound foundation now exists upon which to continue the scientific investigations of the Yucca Mountain site to assess its suitability as a geologic repository.

Questions have arisen on the value of the previous work performed in the Program. Out of the $2 billion figure frequently cited as having been spent on the Program, about $1 billion has actually been spent on the Yucca Mountain Project since passage of the Nuclear Waste Policy Act of 1982. Another billion dollars was spent on other projects and activities that were subsequently terminated when Congress passed the Nuclear Waste Policy Amendments Act in 1987. These other activities included the investigation of salt sites for the first repository in Mississippi, Louisiana, Texas, and Utah; the Basalt Waste Isolation Project at Hanford, Washington; the siting activities for a second repository in 17 States in the northeastern, north-central and southeastern parts of the United States; and the screening of 11 sites in 6 States and identification of three sites in Tennessee for the development of the site-specific proposal for the Monitored Retrievable Storage Facility. Enclosure 1 shows the actual costs incurred for these activities through January 1990.

As you know, the 1987 Amendments Act greatly focused the Program's activities. If the Department had been required to continue the activities which were terminated, the Program expenditures up to this time would have been considerably higher.

The large data base and experience gained from these activities, both positive and negative, are invaluable and are being incorporated in the ongoing activities as appropriate.

Prior to the selection of Yucca Mountain site as the only site for investigation, the money spent at the Yucca Mountain site produced useful and tangible results. Much work has been conducted and much scientific information has been obtained. Over 220 boreholes of various depths have been drilled to obtain information on the geologic and hydrologic conditions at Yucca Mountain and to monitor these conditions; 95 trenches and soil pits have been excavated to obtain information on faulting and infiltration; nearly 600 monitoring stations are being utilized to obtain information on regional ground water, soil moisture, meteorological data, and seismic activity; over 40 surveys have been performed to examine archaeological, biological, and socioeconomic impacts, gravity and magnetic conditions, and to acquire geophysical data; underground tests have been performed on rock properties and spent fuel effects; and laboratory and modeling activities of the Yucca Mountain site have been conducted. These results justified continued focused characterization. These activities have been documented extensively in Program documents, such as the Site Characterization Plan that was published in December 1988 and related progress reports. A summary of the activities appears in Enclosure 2.

These initial site activities and the extensive documentation are necessary prerequisites for the unprecedented nature of this mission--to show that a man-made facility in a stable geologic formation can safely contain radioactive wastes for thousands of years. The rigor of this task is essential to show that all statutory and regulatory requirements can be met and be defensible in a nuclear licensing proceeding. The Department will take all available actions to control costs, but all the information to date shows that such a Program will be expensive.

The Department's activities are proceeding but we face a crucial delay if the State of Nevada continues to refuse to act on permits necessary for the Department to initiate new scientific investigations required to meet the Congressional mandate. Unfortunately, after the State returned our applications for these permits, the Department had to request the Department of Justice to initiate litigation. A suit was filed against the State on January 25 seeking to require action by the State on our applications.

I admire your leadership on this critical national issue, and I share your concern on the progress being made and value of the work to date. I trust this information assists you in your deliberations on the Civilian Radioactive Waste Management Program.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

Enclosures

Enclosure 1

## NUCLEAR WASTE FUND
## COSTS INCURRED

January 1983 thru January 1990

(dollars in thousands)

| | | |
|---|---|---|
| DEPARTMENT OF ENERGY: | | |
| Yucca Mountain Project<br>Nevada | $1,000,422* | |
| Basalt Waste Isolation Project<br>Washington | 553,681** | - Terminated by Congress 1987 |
| Salt Repository Project<br>Texas, Mississippi, Louisiana, Utah | 592,672** | - Terminated by Congress 1987 |
| Crystalline (Second Repository) Project | 117,488 | - Terminated by Congress 1987 |
| Monitored Retrievable Storage | 46,248 | |
| Transportation & Systems Integration | 157,738 | |
| NUCLEAR REGULATORY COMMISSION: | 65,327 | |

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* Includes $40.5 million in grant funds to the State of Nevada and $10 million to affected units of local government in Nevada.

** Includes $54.3 million in grant funds to Washington, Texas, Mississippi, Louisiana and Utah

Enclosure 2

# Yucca Mountain Site Investigations

Exploration of the Nevada Test Site for the purpose of discovering a suitable site for development as a nuclear waste repository began in 1977. In mid-1979, investigations began concentrating on Yucca Mountain as the most promising potential repository site. Existing and ongoing site investigations for the Yucca Mountain site include: drillholes (223); trenches and soil pits (95); geologic maps (9); various types of monitoring stations (595); pavement studies (7); surveys to investigate various phenomena and existing conditions (44); underground tests (8); and numerous ongoing laboratory and modeling activities. The types of data obtained from these investigations are summarized below. Representative locations in relation to the proposed repository site boundary at Yucca Mountain are shown on Figure 8.4.2-1a (attached) from the Site Characterization Plan.

DRILLHOLES: Many drillholes have been drilled at the site and in the surrounding region to measure various geological characteristics. These drillholes range in depth from 5 to 6000 feet. The drillholes can be classified as follows:

15 geologic drillholes - used to measure geologic, geophysical, and rock property data and to obtain core samples.

2 volcanic drillholes - used to obtain data and core samples necessary to determine volcanic characteristics.

12 repository facility crossholes - used to obtain near-surface samples and to determine alluvial thicknesses.

10 saturated zone drillholes - used to obtain hydrologic, geologic, and geophysical data in the saturated zone.

16 water table drillholes - used to obtain water table measurements.

8 unsaturated zone drillholes - used to obtain hydrologic and geologic data in the unsaturated zone.

80 unsaturated zone neutron drillholes - shallow holes (15 to 120 ft.) used to measure natural infiltration rates.

3 water wells - includes proposed and alternate sources of water for project use.

77 seismic shot holes - shallow holes (50 to 200 ft.) used to emplace energy sources required for seismic data acquisition.

TRENCHES AND SOIL PITS: Numerous trenches and soil pits have been excavated to investigate: tectonic activity during the Quaternary period (the last 2 million years); the impacts of time and climate on soils deposited during the Quaternary period; soil infiltration capacity and conductivity; and fracture mapping capabilities. These include:

37 Quaternary faulting trenches - used to investigate soils and near-surface faulting occurring over the last 2 million years.

55 soil trenches - used to obtain age data, physical properties, and infiltration capacities of soils.

3 geologic test pits - used for feasibility studies on fracture mapping.

GEOLOGIC MAPS: Extensive geologic mapping of the area has been conducted. In the Yucca Mountain area, 9 geologic maps have been developed.

MONITORING STATIONS: Nearly 600 monitoring stations are in operation. These stations are used to monitor natural conditions at the site and surrounding areas. These include:

338 regional ground-water monitoring stations - used to obtain water level data measurements. (Most of these wells were not drilled in association with the Civilian Radioactive Waste Program but the owners have allowed the Department to collect data.)

22 ground-water recharge monitoring stations - used to determine ground-water travel times through fractured rock, to examine soils, and to monitor climatic conditions.

3 soil moisture monitoring stations - used to collect soil water for isotopic analysis.

6 meteorological monitoring stations (on 5 towers) - used to collect meteorological data for climate modeling.

45 precipitation and streamflow monitoring stations - used to collect data on rainfall and streamflow for modeling flood hazard potential, precipitation, and the relationship between precipitation, streamflow, and debris transport.

33 precipitation collectors - used to collect data for interpretation on the timing and origin of groundwater recharge and for isotopic analysis.

54 seismic monitoring stations (set up by the USGS throughout the Southern Great Basin) - utilized to assess seismic and tectonic activity throughout the region.

19 weapons-test seismicity monitors - used to measure ground motion resulting from nuclear detonations at the Nevada Test Site to help determine how such events would affect the potential repository.

75 ground water geochemistry sampling monitoring stations - used to collect water for geochemical analysis.

PAVEMENT STUDIES: Pavement studies (7) are used to characterize fractured rock for fluid flow and geochemical properties as well as to provide data for modeling activities.

SURVEYS: Over 40 regional surveys have been conducted to obtain information on the natural and socioeconomic conditions of the area. These include:

2 gravity surveys - Data obtained from 3961 stations was used to obtain information on the gravity field at Yucca Mountain and to help to understand the subsurface geology.

9 magnetic surveys - used to obtain magnetic and geoelectric data which provide further information on the geology of the site.

7 seismic reflection and 8 seismic refraction surveys - used to obtain structural images of the subsurface in the Yucca Mountain area.

2 uranium series dating surveys - used to age-date fault movement in the vicinity of Yucca Mountain.

2 archaeological surveys - used to identify cultural resources in the area, assess potential impacts of a repository, and develop a cultural resources management plan for their protection.

10 biological surveys - used to determine animal and vegetation populations and distribution, to identify potential conservation issues, and to observe the impacts of site characterization activities on biological conditions.

2 socioeconomic surveys - used to estimate populations along proposed Nevada transportation routes and to estimate the impacts on the surrounding area if Yucca Mountain were to be nominated as the repository site.

2 paleoclimate surveys - used to collect ancient climate data to aid in predicting possible future climatic changes.

UNDERGROUND TESTS: Advantage has been taken of existing underground facilities to study rock properties and the effects of emplaced waste on surrounding rock.

7 G-Tunnel Tests - Several geomechanical and electromagnetic tests have been performed on tuffaceous rocks in G-Tunnel under mechanical and thermal conditions similar to that which would occur in a nuclear waste repository at Yucca Mountain.

1 Climax Facility - One investigation was performed to measure the geomechanical and thermal effects of spent fuel containers emplaced in rock.

LABORATORY AND MODELING ACTIVITIES: Many laboratory investigations and modeling activities have been and are underway at DOE national laboratories and at the United States Geologic Survey in support of the scientific investigations at Yucca Mountain. These include modeling of natural conditions to help predict future changes in environmental and geologic conditions; and extensive laboratory investigations of rock mechanical properties, geochemical characteristics, and chemical interactions between the waste package and the candidate host rock.

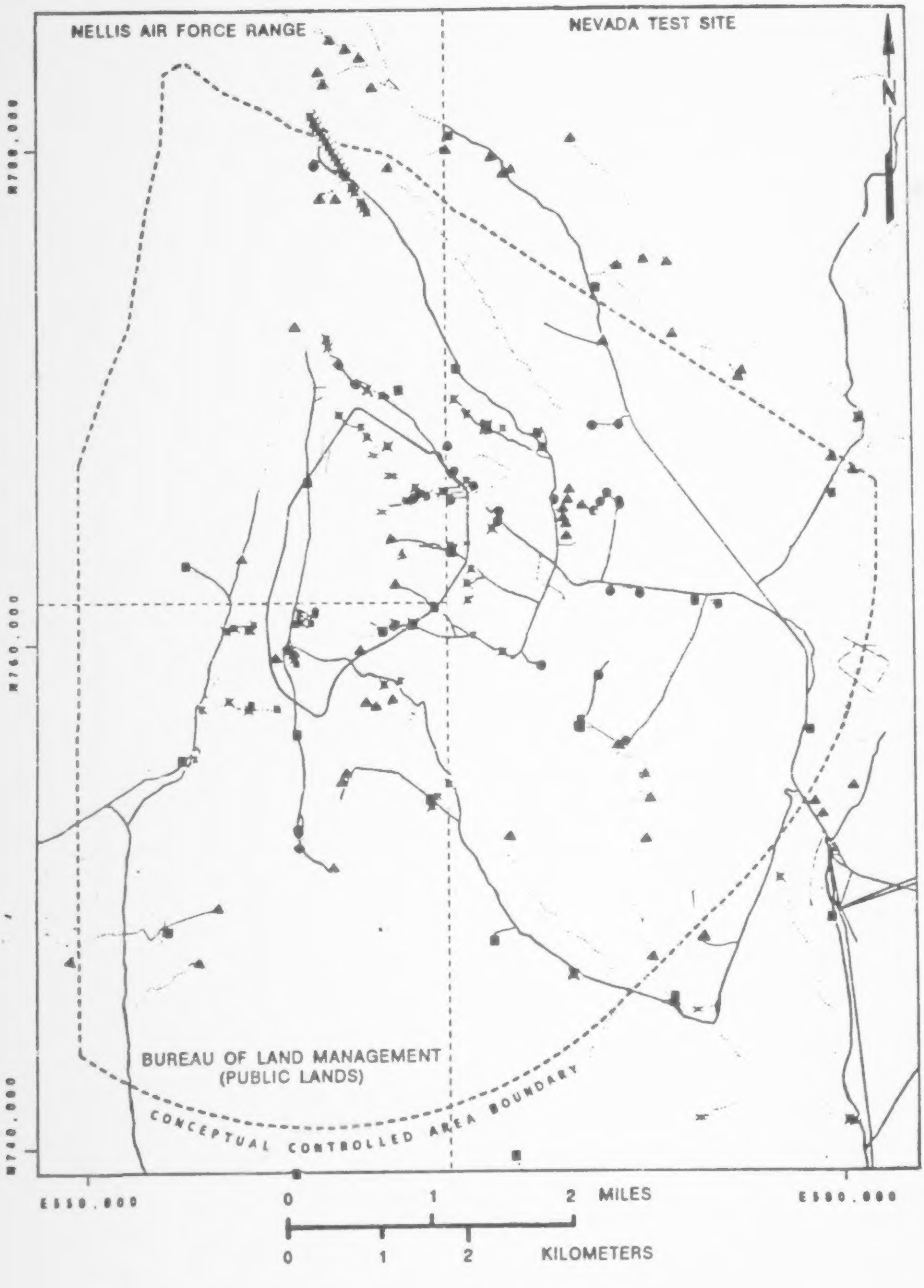
NELLIS AIR FORCE RANGE
NEVADA TEST SITE
N
N780,000
N760,000
N740,000
BUREAU OF LAND MANAGEMENT
(PUBLIC LANDS)
CONCEPTUAL CONTROLLED AREA BOUNDARY
E550,000
E580,000
0
1
2
MILES
0
1
2
KILOMETERS

Figure 8.4.2-1a. Existing surfaced-based activities. See Figure 8.4.2-1b for legend.

## LEGEND

- ✖ SHALLOW BORINGS <100FT.
- ◆ DRY DRILLHOLES——UNSATURATED ZONE BOREHOLES
- ● COREHOLES
- ■ SATURATED ZONE AND WATER TABLE BOREHOLES
- ▲ TRENCHES
- ✱ PAVEMENTS

- ∿ LIGHT DUTY ROADS
- ∿ UNIMPROVED ROADS
- ∿ TRAILS

- ○ CONCEPTUAL PERIMETER DRIFT BOUNDARY

SOURCES:

1956 1:24,000 USGS TOPOGRAPHIC MAPS
1976 1:24,000 USGS ORTHOPHOTO MAPS
1983 1:100,000 USGS TOPOGRAPHIC MAPS
7/1986 AND 9/1987 1:24,000 AERIAL PHOTOGRAPHY
GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE
CONCEPTUAL PDB – SNL DRAWING R07003A
MAP COMPILED IN SEPTEMBER 1988

Figure 8.4.2-1b. Legend for Figure 8.4.2-1a.

The CHAIRMAN. Thank you very much, Admiral.

Admiral, with respect to the court order, I think you said you were seeking a court order that Nevada stop impeding the ongoing study. I wonder if this order, if granted and not appealed or finally disposed of on appeal, will dispose of all the issues of access to the site, ability to dig the shaft, all of the permits that you need or whether that simply might dispose of part of the issues leaving open a whole new series of unissued permits for next year and the year after and the year after that.

Secretary WATKINS. I would hope so, Mr. Chairman. I am not clear as to what it would mean over the long haul. I would have to compare the specifics of the two suits, and I am not a lawyer I do not at this point know exactly what it means were one to continue and the other be approved, for example the district court. I am not certain what would happen on our particular suit for the air permits or for the other permits, if we were to win in the district court.

And, as you know, the State has now asked the district court to defer actions pending the Ninth Circuit Court work on the *Nevada* v. *Watkins* suit there.

So, we have opposed that or we intend to oppose that.

The CHAIRMAN. That is on the question of veto, *Nevada* v. *Watkins?*

Secretary WATKINS. Yes, that is on the question of veto.

The CHAIRMAN. That seems awfully clear to me. I swear I do not understand.

Secretary WATKINS. Well, we think it is without merit but, nevertheless, we have to go through a rather laborious set of procedures that, at best, would give us some kind of an answer this summer if they really moved that particular court action, the one in Nevada.

The State would like to defer that, of course, pending the Ninth Circuit Court work as another obstacle in our path. We will try to defeat that and move our programs so we can get the permits. Hopefully with those permits in hand we can get to work.

The CHAIRMAN. The courts can move with great dispatch when they are disposed to do so, and on a question as clear as the question of veto, I mean, it is not that the State does not have a veto. It clearly does not have a veto at this particular point. That comes after characterization.

Secretary WATKINS. Exactly, that is correct.

The CHAIRMAN. Now, if it is going to take the court months to declare what the law is when it is printed out in bold print and it is so clear, is this an indication that the court just—well, maybe the Secretary should not criticize the courts.

Secretary WATKINS. That would be the last thing I would do, Mr. Chairman. [Laughter.]

The CHAIRMAN. I mean, I just wonder if we should get counsel to give us a report—and he need not evaluate whether the courts are dragging their feet—but I am concerned about whether this disposes of all of the issues.[1]

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[1] See Appendix II for additional material.

Secretary WATKINS. I might let you know, Mr. Chairman, that Nevada's opening brief in the Ninth Circuit Court is due April 26. DOE's response is due May 25. Nevada's reply is due June 9. So that is the reason for my mentioning the summer. Why it takes these lengthy periods of time, I just do not have any idea.

The CHAIRMAN. Maybe there are some other issues in there that I am not familiar with.

Secretary WATKINS. It is very clear to us exactly what the law says in the Nuclear Waste Policy Act regarding veto. We do not think the case brought by Nevada has any merit under the provisions of that law and, therefore, we think the court should move expeditiously. But, my experience in the past leads me to be more cautious than I otherwise would be because, the Ninth Circuit Court I have watched for a number of years, and it does not tend to be one of the swiftest in many ways.

The CHAIRMAN. You have watched with minimal high regard? [Laughter.]

Secretary WATKINS. You said that, Mr. Chairman. [Laughter.]

The CHAIRMAN. I withdraw that question.

Admiral, I am concerned about not being able to sink this shaft until the end of 1992. Now, I know you have got some redesign that has to be done, but why the end of 1992? That seems laboriously slow.

Secretary WATKINS. Let me ask Mr. Rousso, the director of the office, to answer that and then maybe Mr. Duffy if he has anything to add.

Mr. ROUSSO. Thank you, Mr. Chairman.

Mr. Chairman, members of the committee, the reason it takes that amount of time is, number one, we are doing an investigation of alternate design concepts, as Mr. Duffy mentioned, that have been raised by the Technical Review Board which is empowered to provide technical overview for the program as well as the NRC, and the State has made comments as to location of the shafts, whether you need shafts or ramps, these other combinations of things. So, we are doing a detailed study to determine what indeed is the best path to follow.

At the conclusion of that study which should run close to the end of this year, we would then make the selection of the actual shaft design and/or ramp design. We would then proceed with the title II design effort leading to a start of site preparation which precedes the actual shaft drilling by about 6 to 9 months.

We are looking now at advancing that schedule as much as possible, doing things in parallel where we can, being more aggressive in our pursuit of when we can start. But I would not see that happening closer than an acceleration of 6 to 9 months.

The CHAIRMAN. Well, an advancement of 6 to 9 months we would consider to be very important.

Mr. ROUSSO. We are positively pursuing that. What we will be doing as soon as we get permits is to determine as much as we can from the surface based data, and that will be a useful precursor. It is not stalling the start of the shaft. We will move the shaft as aggressively as we possibly can, consistent with health and safety.

The CHAIRMAN. Well, we will give you a gold star from this committee if you can speed it up. There has not been one single milestone that has been met in the whole nuclear waste program that we know of, not one, and the amount of tax being collected—I call it a tax—it is a fee, but it is a tax on the ratepayers—is woefully insufficient, particularly given the delay in this program.

It never ceases to amaze me how we can spend hundreds of millions of dollars and have no comment about it in the press and nobody is upset about it.

If you go out here and spend some expense account, overexpend it by 50 bucks at lunch, it will make headlines. But you can spend hundreds of millions of dollars and delay this kind of program, and nobody knows, nobody seems to care.

But, I mean, the money just goes on and on and on, and a tremendous amount, and we are very, very concerned about it in this committee. I know you are concerned, but it has been frustration which year after year, in hearing after hearing. We try to get a sense of urgency to get this program going.

Now, Mr. Rousso, I am convinced you are going to try to get that 6 to 9 months advance in the schedule. I believe it could be done with the proper sense of urgency, and it probably would take some cooperation of the courts, and we hope that they will cooperate.

Secretary WATKINS. I think it is important, Mr. Chairman, that you know that we are dedicated to moving this expeditiously. Everything you see on this chart can be moved to the left.

We have already begun to accomplish—at least there is one target in there that was accomplished early—so we have one victory, minor victory. What I am saying is we do watch this all the time. It is potentially the most intractable issue I have in the entire department. Everything else seems to be—I can see the light at the end of the tunnel.

Until we can get through this court case I am not sure just what we have got here but we are going to be aggressive in every area.

You know, we have spent $2.5 billion to date on this program, but $1.75 billion of that, two-thirds of that, was on a lot of old projects that were ended by the amended act in 1987. So, every time we throw out those figures, I get clobbered because DOE is not aggressively going after this.

I would like to separate myself from March 1, 1989, and prior if I possibly can, and you can help me in that regard.

The CHAIRMAN. Well, you can certainly do so, but still we have wasted too much on the program before you came. I mean, most of this was put in motion before you came. And I do not mean to say that it has been Adm. Jim Watkins who has wasted $2 billion or indeed to suggest that all of it has been wasted.

But I can tell you that we had no concept on this committee that they were talking about spending that kind of money or taking that amount of time.

The scientists came and told us that we would have to characterize the site, go out and dig a shaft. Fine. But billions of dollars expended before you dig the shaft? Nobody ever suggested that. With all of the delay and all of the—I am sure the consultants are glad to get the money.

Mr. DUFFY. Mr. Chairman, I am sure there is some scientific data that was achieved with the $1,600,000,000.

The CHAIRMAN. I would hope we got something out of it.

Mr. Duffy. There are over 200 bore holes that were done at the Yucca Mountain area. There are over 37,000 feet of borings that are evaluated. They are not eligible for NRC qualification, but they did provide an indication in developing a nuclear waste policy act that Yucca Mountain could be characterized. So, there was a positive aspect.

But, as you say, there was a lot of money expended. We would not have proceeded further if those 200 bore holes and the information that we got initially were not indicative of a good site.

The Chairman. Admiral, do you have any hope that Nevada can be cooperative or be brought around on this issue? I mean, to me it is absolutely incredible that the State of Nevada has all of these nuclear test sites out there where these huge thermonuclear devices were exploded in the ground have no barrier between them and the ground and nobody complains. The same cesium and all of this red hot stuff that is down in there, nobody complains about that. And here we are trying to put a very carefully engineered facility, most would say very much overengineered much safer facility, which produces a whole lot more jobs and a whole lot more economic impact. And to the former they have no objection and to this they just go up in smoke.

Do you have any hope of being able to——

Secretary Watkins. I really do, Mr. Chairman. I see some signs already. There are certain alliances that have been brought together out there that are now very much supported. We seem to have had support from the University of Nevada.

I believe this court case is critical. I think that in going through this process, hopefully it will be expeditiously handled, and that will lay the marker down. Then, with the education program we have out there, for the public and with a lot of effort on our part, to even pay for their scientists to come in and oversee it, it seems to me that reasonable people will look at that and say let us get on with the project. Let us get on with the characterization.

I am hopeful that if we can get through this court case by this summer, that we will see attitudes begin to turn around and get on with it and do it properly. So, I do have some hope now. I was not sure a year ago.

The Chairman. Admiral, what kind of confidence do you have with your ability to meet the 1998 date?

Secretary Watkins. We can meet the 1998 date if we can de-link within the next 2 years, and if we have a volunteer site picked by the negotiator. So, those are the two, only two criteria.

The Chairman. De-link the MRS?

Secretary Watkins. Yes, because they are coupled now with the 2010 timeframe. We could not possibly achieve 1998, and so we have to de-link, the repository from the MRS and we are going to work with you to try to set that up somewhere in the near timeframe. It is not that urgent that we de-link today, for example. It has to be done within a 2-year timeframe. It is important that we get our negotiator out there and start looking for potential volunteer sites, and I think we are going to get those.

The reason I think we are going to get those is because you are going to see this year, in my opinion, the Waste Isolation Pilot Plant in New Mexico open for research. While they are different repositories, the concepts are very similar, and I think that you are going to see a downplaying of the negativism associated with properly engineered scientifically sound, openly conducted processes to handle our radioactive waste, whether it is defense or non-defense.

We have to set the tone almost for the world. France is having severe difficulties right now in the same areas we are. And so I think——

The CHAIRMAN. What is the difficulty in France?

Secretary WATKINS. Their high level waste repositories are also—they are looking at, I think, some six sites that were just turned down by environmentalist pressures in each of the areas selected.

Now, what that means to them I am not sure at this point. We are all in this game together around the world, and I think that we need to set the proper cientific and well engineered model. We can do that at the waste isolation pilot plant, which will go a long way towards allaying the fears that we are a group of incompetents that do not know what we are doing.

We can do the job. We have not put our shoulder to the wheel properly, but we are doing it now. This year is going to be a good year for turning public opinion around to say let us use our best foot forward in technology, which we are best at in the world, and get on with this thing. We can do it and do it well. So, I am hopeful.

The CHAIRMAN. One more comment. Then I have some more questions which I will submit in writing, but I want to make a comment. I would simply urge you to in all matters nuclear to try to do the right thing and not overdo it.

Now, when I say do the right thing, I know you are going to do the right thing from the standpoint of honesty and integrity and what is right. But I think what we have tried to do so many times in the nuclear program is to accommodate to unreasonable fears and unjustifiable paranoia really, sometimes, and overengineer things in order to do that, which does not assuage the fear, but rather further contributes to it by saying there must be something there. If they are building this bell and whistle here, it must be to protect against a real fear.

Now, what we need to do is to have the best science in the world and have absolutely safe nuclear waste disposal, but not to do it, not to dig extra shafts—I mean, extra external shafts if they are not necessary, not to further delay the program if they are not necessary, not to have another series of lawsuits if they are not necessary. In other words, to get on with the program and do it right and scientifically right, but not to waste money unnecessarily.

Secretary WATKINS. I agree with you, Mr. Chairman. I think the genesis of this problem, frankly, is our own lack of credibility in the area that we should be best in, that is, science and technology. We did not do a good job. We were caught up in it, in the issues at Savannah River and Rocky Flats.

It gave us a black eye across the Nation, and we are trying to build out of that, and I think once we do that, I believe the American people will say it is competently done, and this is one of the reasons why we have gone to a very new policy of openness to regain that credibility, or I do not think we can get there.

The CHAIRMAN. Let me ask one final question. Through the years, we have had the scientists who have appeared at this table and who have told us that from the standpoint of scientific difficulty that disposal of nuclear waste is a fairly straightforward engineering and scientific problem. It is relatively easily solvable. Does that continue to be your opinion?

Secretary WATKINS. Yes, absolutely, when I discovered last year—as you know, the ten-point program, when I brought everything to a halt and said I am not going to pay attention to prior schedules, this came about because I had a meeting with the National Academy of Sciences, with Frank Press and his people, and they said look, we told you in 1983, 1984, 1985, 1986 and 1987, what you had to do, some 26 items, to properly prepare yourself for getting into the research work at the Waste Isolation Pilot Plant in New Mexico, and you ignored them all.

Now, we cannot do that—and they were legitimate concerns, and now we have had to address all 26 late in the game. That is the kind of credibility problem I mean. We just simply cannot allow ourselves to get into that situation, but we did, and I think this has set us all back.

The other side was on a roll, then, because we exposed ourselves as being less than professional in the way we handled those things. I do believe that in some ways we shot ourselves in the foot in dealing with the Yucca Mountain issue because of it.

I think we had to go through that catharsis, if you will, and to get it all back on an even keel and straightened out in some sort of an organized, professional way, as we have done here. So I have to really point at that as the villain, almost more than anything else, here.

The CHAIRMAN. Well, I want to congratulate you on keeping more credibility than I think anyone else has achieved in the whole nuclear field, and I think the American public is gaining confidence in the fact that you are managing this program in a safe way as well as a competent way.

Senator McClure.

Senator MCCLURE. Thank you very much, Mr. Chairman, and thank you, Mr. Secretary, for the answers you have given already. I will not go back over the same ground at all. I do want to look for just a moment at schedules, and what that may mean.

The utility industry believes that section 302(a)(5)(B) of the statute requires that DOE begin taking waste by January 31, 1998. When we worked on and approved the 1987 amendments, I think it is fair to say that we assumed that that date would slip by probably as much as 5 years.

Since the passage of the amendments in 1987, a little over 2 years have passed with what appears to be little progress, and if that all we did was add that 2 years to the slippage that we assumed might occur, we would get out to a 2005 date.

Now you are suggesting that we move our target date to 2010. That is some 12 years beyond what was assumed at the time of the last legislation passed here. I am concerned about what happens if, indeed, we have that 12-year delay with respect to the capacity of the nuclear industry to continue to store waste at-site.

For, very frankly, we were told some years ago that they simply could not get it done, and one of the great fears we had at that time was that they could not get NRC permits for such storage in time to meet schedules for refueling reactors.

That fear proved to be false. NRC found a way to do it, the utility industry found a way to accommodate those slippages in time. But the question how is are we going to be able, in the nuclear industry in this country, to continue to store waste at site and accommodate to the 2010 date you are now suggesting?

Secretary WATKINS. We believe, Senator McClure, that if we can get our negotiator approved up here, and within two years get a volunteer site and work the delinkage with you, which we have time to do, that we can meet a 1998 date as I stated.

That is iffy. It is not easy to select these sites, to get them to volunteer and have anything but the wrath of Jehovah come down upon you. It is not easy, but we can do it. That is our commitment. I have looked into what is possible out there in the way of storage in the existing pools, and as you know, in some cases we have actually shipped fuel between reactors, but we do not have that much room.

We are going to have, by the year 2010, about 12,000 metric tons of uranium at 53 sites for which there is no pool storage. We simply have to get on with the MRS concept, and we have to get on in just about the 1998 timeframe in order not to cause a lot of confusion.

Now, we probably have some flexibility. We could still migrate some fuels, but this would pose difficult transportation problems, something we would have to address. It would be very difficult, so we do not have a lot of flexibility there, and we really should push hard for 1998.

Senator McCLURE. That will require a lot of things to fall in place, in addition to the ones you have mentioned?

Secretary WATKINS. Yes, sir, and they are all right up here in the MRS plan, where you have a very separate plan that has to move aggressively along with this in order to avoid excessive spent fuel storage in existing pools.

Senator McCLURE. Well, one of the reasons I mentioned, that I hope this country realizes what the alternative is. There is an alternative, and that is to continue to expand insitu storage. That is what is happening, and I wonder if this country really believes that having nuclear waste stored at a whole bunch of sites all over this country is better than getting on with having a well-conceived, permanent MRS repository in place.

Congress a long time ago looked at that question and said we believe it makes more sense for this country, in terms of environmental impact and safety of the public, to have these kinds of storage facilities, and MRS and a permanent repository, rather than building up these wastes in a diverse number of pools all over the country.

Secretary WATKINS. I could not agree more, Senator McClure. What we are going to have in 1998 is 27 nuclear facilities that are going to be out of storage capacity in situ, and so therefore they are going to have to find new pools on-site.

To do this, this means essentially, 27 facilities across the various states affected, are a de facto MRS, if you see what I mean. I do not think they realize that.

Senator McCLURE. The people in those states ought to be responding in a way that assists us to get on with this program.

Secretary WATKINS. Well, I am in total synchronism with you, Senator McClure. This is the message we are trying to get out, but it is very difficult—extremely difficult to do this.

The CHAIRMAN. Would the senator yield at that point?

Senator McCLURE. Certainly.

The CHAIRMAN. I wonder if you might give us a short, understandable report that can be disseminated showing what the cost would be of continuing to store on-site until the year—I guess it would be 2010 before the repository is ready.

Secretary WATKINS. I think it would be very useful, and we will send a letter to you, Mr. Chairman, and to Senator McClure, getting very specific in talking about what states we are talking about. I think it will be very revealing that we cannot have it both ways. We cannot have the power in this country that we need desperately, and then have the opposition to deal with the waste products that that power generates, and do it responsibly.

Senator McCLURE. I do not mean to overemphasize this point, but I think it is important to understand, when we passed this act in 1982, we put a levy on the electric utility customers of electricity generated in these nuclear power plants. That levy is being collected, and it is being placed in this fund, and it is dedicated toward solving a problem.

At the same time they are paying that charge on the utility bills, they are also having to pay additional charges for the temporary storage and the expansion of the temporary storage in situ.

Secretary WATKINS. Exactly, which is very cost- inefficient to do.

Senator McCLURE. It is a terrible waste of money.

Secretary WATKINS. It is, and the ratepayers are going to be the ones, again, hurt. We will try to outline this in sufficient detail with a cost analysis on it. Hopefully that will help air some of the negative alternatives to getting on with this program.

Senator McCLURE. Now, I am not blaming the nuclear industry or the power industry.

Secretary WATKINS. No, it is not the nuclear industry. It is our whole malaise on this issue for ten years. We have been fooling around with it when we should have solved it technically, which we can do, and do it properly. We simply have to get on with it.

Senator McCLURE. Now, you have indicated some optimism with respect to the transportation studies. Is the Department of Transportation fully cooperative in regard to these studies and these plans?

Mr. DUFFY. We are working on transportation in parallel with the design of the operation. The Department at the present time ships 40,000 radioactive shipments a year. We are working with the states in relationship to the Waste Isolation Pilot Plan to develop training and emergency response operation with the corridor states, and we will be working with other corridor states before the need for the MRS shipments of the spent fuel. We think we will be ready for that.

Senator McCLURE. There are a whole host of other Federal agencies that have to be involved in this effort.

Secretary WATKINS. Yes, sir. You will see one of the line items on our chart is transportation. It is very important. I have worked with the western governors particularly on a specific set of problems they have in the West, the 15 Governors. I think we have solved that problem to the mutual consent of everyone. We are working on that right along with the site characterization and the MRS work.

Senator McCLURE. I do not mean to go into every one of those linkages with other agencies. That would take more than the time we have this morning. But I noted on February 23 you issued a press release that DOE has complied with the Federal Endangered Species Act for the purposes of surface disturbing work at Yucca Mountain. Did that work smoothly? Did you have difficulty? Did you have full cooperation?

Secretary WATKINS. As far as I know, that went very smoothly, Senator McClure, and we are through the Desert Tortoise issue successfully.

Senator McCLURE. I commend both you and them. You have had trouble with the State of Nevada, who for their own reasons do not wish this to go forward and are doing everything they can to keep it from going forward. I will say it more bluntly than I would expect you to—they do not intend you to ever build this. They are going to do everything they can to see that you do not.

Secretary WATKINS. I think you have broken their code. [Laughter.]

Senator McCLURE. There is a danger that some other Federal agencies might also participate in that sort of action, and apparently you have successfully avoided that problem.

Secretary WATKINS. I think we have, Senator McClure. One of the agencies with which the DOE had a very poor relationship a year ago was the Environmental Protection Agency, both in the field and at headquarters. I think we have salved a lot of those wounds now, and we are underway.

We have got some good agreements out of EPA. We have had some good state agreements now, where EPA is involved, and I believe we are getting that back to a normal relationship. Certainly, at the Bill Reilly-Watkins level, we are most of the way down the line.

We hope that is part of our credibility-rebuilding strength. We have no problems with the Department of Transportation, Interior, and others who are working on these problems.

Senator McCLURE. I am going to read back to you a small excerpt from your statement that you did not read, but it is there, and then I know what your answer will be, but I want you to have the chance to say it on the record.

You say, on page 8 of your statement——

Secretary WATKINS. This is the longer statement?

Senator McCLURE. Yes. In an attempt to be optimistic, the program has in the past put together and issued schedules which assume compliance with or adherence to DOE's schedules by external parties over which DOE virtually has no control. While I admire optimism, DOE does not have unilateral control over all actions and decisions associated with implementing the Nuclear Waste Policy Act.

Then you go on to say that you believe that the schedule you have now established has enough latitude in it so you believe it is realistic.

Secretary **Watkins**. Yes, sir, I do.

Senator **McClure**. Even though you do not control these external parties, or external actions?

Secretary **Watkins**. We know how to massage, Senator McClure, and I think we are doing that now very well, with many of the groups with which we have to work. They are identified here.

It is a complex series of entities that we have to deal with, but nevertheless I think that competence and professionalism, and a steady hand on this tiller, and science, and engineering, and good cooperation are the name of the game now, and I believe we can get there.

I do not see that kind of internal opposition from these various entities. I think they are very serious about doing this thing right. That is why I have some optimism now, that this credibility problem has given rise to much of the internal squabbling that was going on before, and frankly, most of them were right, too often. Not right all the time, but they were right enough to make a legitimate case against us.

Senator **McClure**. You have not been noted for being overly optimistic about the affairs of DOE. Since you have come in as Secretary, you have been an outspoken critic of many of the things you have found here.

Secretary **Watkins**. No longer, Senator McClure. We are on the way now. We bottomed out and we are on the way up.

Senator **McClure**. Now, you see, I am going to take the other side of that. You have become optimistic, and I have become pessimistic.

Secretary **Watkins**. That is the American way. [Laughter.]

Senator **McClure**. I suspect it is maybe something that the Chairman referred to a moment ago about court schedules and the court processes. I have never learned yet how to massage a Federal circuit judge. [Laughter.]

Secretary **Watkins**. That was not the entity I was talking about.

Senator **McClure**. I was wondering what you knew that the rest of us did not know, but I am of the legal profession, as is the Chairman, which may mean that we know enough about that profession to be pessimistic, and I do know enough about that profession to be pessimistic. I do know enough about court processes to be pessimistic about schedules, and I think maybe if there is one area in which you have laid out before us that there is a problem that is externally beyond control that you may have underestimated, it is the capacity of attorneys to dream up reasons why they could get into court and tell you you cannot do it.

Secretary **Watkins**. I think you are right, Senator McClure, and obviously we want to keep the committee here fully apprised of events as they unfold in the two court cases that now butt up against each other. We will do that.

As we approach this summer, obviously, if we see no progress and we see the kind of obstacles still there, then we have to review this situation and see if we need to ask you for help. I hope that that is not necessary.

Senator **McClure**. That is one of the reasons I mentioned a moment ago, as I did, what this cost the country in terms of good, sound environmental policy and what it cost ratepayers in terms of double assessments.

I think we have a very, very real problem which I know you appreciate and are trying to work on. I know this committee appreciates and has tried to deal with it, but somehow the public understanding has to be expanded about what the real alternatives are.

Secretary **Watkins**. I hope that our national energy strategy, when we finally get it out and air it, will make it possible for the American people to look at alternatives.

When you are down on fossil, down on nuclear, there is not much left to do the Nation's bidding and gross national product economics suffers severely and somehow it has not been easy to provide a model that people can look at and say now, fine. You want to make a decision not to open the ANWR range or you want to have no more offshore oil drilling, then you must recognize that if the Nation is going to stay competitive internationally and we are going to have our standard of living, that you have only another set of alternatives to look at.

So, we have to do that, I think, in a way that people can understand it today. I think it is a hodgepodge of fractionated items that people look at in isolation of everything else, and they say well, we will just close that down. We do not want to put those greenhouse gases up there. I hope that this is part of the national education program as we finally can get a national energy strategy out there that puts this panoply of energy sources all together and lets the American people themselves make some choices.

They have been hyped by too many people on extreme sides of things, and they have been terribly misled. It gets back to this whole risk assessment issue, you know.

I used the case publicly. We had a situation in Hanford when there was contamination of the asparagus at site 300. Well, that is the bad news, but the good news is that you would have to eat 5,000 metric tons of that asparagus every year for 50 years to get the dose of one skiing trip to Aspen. Now, that never gets out in the press, you see.

Somehow we have to find a way to educate the American people in things scientific, sufficiently so they can make their own risk assessments. It might be more difficult just to walk out their door than to be near a nuclear power plant. We have not been able to do that yet, but we are working on that.

Senator **McClure**. Admiral, thank you very much for raising that issue. We are going through that right now on the Clean Air Act where we have the same kind of risk assessments being made.

What it really boils down to and Mr. Reilly tells me EPA is doing, is the generally accepted scientific consensus opinion around the country is that if it cannot meet the 10 to the minus 6 test over a 70-year period, we have to close down the operation.

Well, let us translate that into real-world rather just a hypothetical run by scientists who may or may not have a consensus. That means if there would be ten deaths that result in the next 700,000 years, the activity has to be terminated.

Now, that tells me you cannot get out of bed in the morning. But, on the other hand, you cannot stay in bed either, and so I do not know what we are supposed to do with that kind of a risk assessment. It is just plain ridiculous, and we apply it to only very selectively in a number of very narrow applications in our society, and then we make myriads of decisions on the other side that affect people throughout our society, economic, political, social welfare, decisions that deal with public health and welfare and we have such a myopia with respect to certain activities that we cannot see how they relate to other activities. I think it is ridiculous.

As a matter of fact, I have toyed with the idea and I probably will not do it because it is ludicrous. I have done some things that people thought were ludicrous, but just to make a matter of national policy that every activity that cannot meet that test has to be stopped. You could not get in your automobile out on the curb. You could not take an airline flight. There are a whole host of activities you simply could not do, and I would say to my friend no, I will not say anything about smoking or tobacco.

Senator **FORD**. Let me tell you, if you had cigarette smoke going out the chimney this damn clean air bill would be over.

Senator **MCCLURE**. It is just ridiculous what this country is doing in some areas.

Secretary **WATKINS**. I agree, Senator McClure, and I think one of the reasons that you see the Department of Energy under my leadership injecting themselves into the whole area of scientific literacy in the Nation is for the very reason you are raising. I do not think we are going to get there until we get this nation to understand some of these things.

What is a PPB, what is a PPM, what is 10 to the minus 6 even. Those things do not mean anything to the American people. If somebody tells them that the reason we have an acid rain bill is because we will be killing babies, this is a tragedy to put that kind of hype out there, but that is not the reason we have the acid rain bill.

I hope that we can get to the point where the American people can make their own assessment, having come through an education process, so that they can deal with the technology that surrounds them in their society.

We are putting ourselves right in the middle of that for the very reason that you are raising. I do not think we can get there from here in the Nation going into space, SDI, all the energy problems, all the technology and environment. All our problems with transfer of technology, is going offshore before we can grab it and put it into our own commercialization? These are real issues we have to get to grips with. We are in the middle of that in the Department of Energy now.

We are establishing those as missions for the very reasons that you are raising here.

Senator **MCCLURE**. Thank you very much for your comments. I may have some other questions to submit for the record.

The **CHAIRMAN**. Senator Ford.

Senator **Ford**. Thank you very much, Mr. Chairman.

I might say to my good friend from Idaho, Senator McClure, that you can say anything about cigarettes because they have all been said before and so I am perfectly willing—you know I take a hit every once in a while. When you come from a State and you defend beautiful women, fast horses, bourbon, cigarettes and coal, you have got a hell of a job, I will tell you that. [Laughter.]

Senator **McClure**. And you do it well. [Laughter.]

Senator **Ford**. I am not surprised, Admiral, at Nevada at all. I do not think we ought to be, having been a Governor and understanding what I think the attitude of the people of the State would be or is. I would do everything in my power to prevent you from coming out there and developing a repository.

And as my learned legal colleagues here of which I am not one explain the frivolous actions in the courts and delaying important decisions, I can understand why the attorneys make so much money. They are on time. And if a court delays it, they have to do a little bit more, and so nothing about this surprises me at all.

But I do want to sympathize with my colleague, Senator McClure, as it relates to all of these regulations or theories or scientific discovery that, you know, you have 700,000 years or 85,000—to eat 5,000 pounds of asparagus a year for 50 years and that sort of thing. You have to remember that those statements and those judgments were made by scientists who have tenure. And so, we are not going to get rid of them. [Laughter.]

Let me ask you, Admiral, do you have any confidence in your negotiators that they can find or line up a State for an MRS without being turned down by 49?

Secretary **Watkins**. I think if we can get our negotiator approved by the Senate in the very near timeframe, and with some credibility rebuilding in this year, I think he is going to have a more level playing field from which to deal.

We already know there is a host of unsolicited bids, and that does not mean that we are happy about that necessarily because the reality of politics has not hit those unsolicited bids yet as they did in one poor person that made an unsolicited bid to house some transuranic materials in the State of Colorado.

We were accused of getting involved in that, which we did not. And so there are a lot of entrepreneurs out there who are willing in areas. And Members of the House have come to me and said we have a site, and our people will accept such a thing, but that has to go through the whole State process.

And so I am hopeful that with some regaining of our own credibility that there will be a better opportunity for our negotiator within the next 2 years to get an alternate, to get a site for an MRS. This is very critical.

Senator **Ford**. Of course we have Maxgy Flats, a low grade repository in our State, and it is leaking and, you know, everybody is fussing and fuming. Then we entered into a compact with the State of Illinois, and I think we approved that here, and now we want to ship our low grade to that site, and Illinois has not been able to come to grips with it to get it done.

I think it is the fear that we need to overcome that we have to overcome. And I say to my good friend, the Chairman, you tell the Admiral to do what is right and not try to overdo it.

I think it is a little bit—with all the lawsuits that are coming down the pike—it is a little bit like a doctor, fearful of malpractice. He practices defensive medicine, and he asks for additional tests that would not be necessarily ordinarily expected, and so not only does it cost a lot more money, it isn't needed.

Now, you said that you had visited with the National Academy of Sciences, and they gave you 26 items that you had not been complying with, if I understood you. Do we have those 26 items before the committee?

Secretary WATKINS. I do not know if they have come up to you directly. We have factored those into our entire Waste Isolation Pilot Plant objectives. They are all in there and have all been addressed in a variety of forums. They are being looked at not only by ourselves, but the National Academy has re-reviewed our situation, and the blue ribbon panel, the State representatives and so forth.

Where they actually stand now I believe is that we have almost eliminated every single item. By the end of April we only will have two items of the entire list remaining. Those are the legislative land withdrawal issue and the finalization of what is called the no migration petition with EPA, which is a very technical and complex and never done before process that we are involved in.

I believe that by summer, by June, we will actually be able to pick a date for opening down there. So, all of the items of the National Academy have now been addressed.

Senator FORD. I would like, Mr. Chairman, if it is possible and if the Admiral would, if you would list those 26 and just give us a short sentence or two as to what you have done to comply with those, what is left. Then give us the estimate on the final two that you are working with now and a date that you think that will be done, and we will not hold you to that date, but just say approximately.

Secretary WATKINS. I would be pleased to do that.

Senator FORD. If you could do that, I would appreciate it very much.

[The information follows:]

The recommendations from the National Academy of Sciences (NAS) staff were contained in several reports dating back to 1982. Department of Energy (DOE) Staff was asked to respond by the NAS to explain the status of the recommendations which were "incomplete." In August of 1989, DOE sent the detailed responses to the recommendations on four of five reports to the Waste Isolation Pilot Plant (WIPP) Office in Carlsbad, New Mexico for verification. The fifth report did not involve WIPP. A copy of the detailed response is attached to this insert.

In October, the Staff Director of the NAS WIPP Panel replied that "rather than comment on specific recommendations from the past, the Panel believes it is more productive to note the great improvement in climate of dialogue and mutual responses that now exist..."

DOE believes that the December Decision Test Plan addressed the outstanding recommendations. The NAS review of the Test Plan is complete and no outstanding issues have been raised. The DOE meets with the NAS WIPP panel quarterly to provide information on the results of scientific investigations to date. At the end of the March, 1990 meeting, the Panel Chairman remarked that the project was going well and that the Panel was anxious for it to proceed.

**Department of Energy**
Washington, DC 20585

AUG 18 1989

Dr. Peter B. Myers
Staff Director
Board on Radioactive Waste Management
National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Dear Dr. Myers:

In June, at my request, you provided me with the series of Academy reports to the Department of Energy containing recommendations on the Waste Isolation Pilot Plant (WIPP). You also provided me with the status of 44 recommendations. I have asked the WIPP staff to review the documents and prepare responses on each of the recommendations which was not marked "complete". Enclosed are the responses for each of the five reports. These responses provide information on how the recommendations were accommodated. With respect to recommendations in the two most recent Academy reports (Enclosures 4 and 5), we have cited specific areas in the current plans for the test phase where the relevant investigations are described.

It appears that in the past, the Department of Energy addressed many of the recommendations through informal presentations to the WIPP panel. I regret these were not better confirmed with a more consistent documentation process. I would appreciate your suggestions as to the steps that could provide more continuity and rigor to this process. In addition, could you and the WIPP panel review the enclosures in order to identify for me any issues which need more attention at this time. If more information is needed, perhaps it could be provided at your next meeting in September.

After we have received comments from the Environmental Protection Agency and the Environmental Evaluation Group, we will be revising the Test Plan which was reviewed in the panel's July 19, 1989, report. I will keep you informed as to our plans as they develop.

Sincerely,

Leo P Duffy

Leo P. Duffy
Special Assistant to the Secretary
for Coordination of
DOE Waste Management

5 Enclosures

ENCLOSURE 1: RESPONSES TO RECOMMENDATIONS CONTAINED IN DOE/NE/93023-3, NATIONAL RESEARCH COUNCIL (1983) WIPP INTERIM REPORT FOR THE PERIOD JULY 1, 1978 TO JULY, 1982.

The following two reports are referenced below: DOE 89-011, draft Management Plan for Performance Assessment and Operations Demonstration for the Waste Isolation Pilot Plant, April, 1989; and SAND89-0178, Preliminary Plan for Disposal-System Characterization and Long-Term Performance Evaluation of the Waste Isolation Pilot Plant, Sandia National Laboratories, S. G. Bertram-Howery and R. L. Hunter, editors, April, 1989.

1. Evaluate the practical effects of resource extraction in zone four to assess whether such extraction poses significant threat to the safety and integrity of the repository.

Response: During the WIPP Site and Preliminary Design Validation (SPDV) effort, it was determined that resource extraction from within Zone 4, especially removal of hydrocarbon resources, would be acceptable. Therefore, Zone 4 was removed from consideration, and the land made available for drilling activities. At present, there is no DOE control outside the "land-withdrawal boundary," i.e., outside the 16-square-mile area contained in Zone 3.

2. Locate one or both of the remaining hydrologic test holes planed to be drilled in 1983 in limenants or fracture traces if such features are revealed on satellite images or high altitude areal photographs. Test holes so located will help determine fracture concentrations.

Response: Since 1983, eight hydrologic exploration holes have been drilled in the site area (H-11, H-12, H-14, H-15, H-16, H-17, H-18, DOE-2). Hole DOE-2 was sited (see issue 2, above) to address the issue of deep-seated evaporite dissolution; Rustler hydrologic data were secondary. Of the other holes, four (H-11, 12, 15, and 17) were drilled specifically to define a suspected high transmissivity zone within the Culebra in the southeastern portion of the WIPP site. In addition, multipad interference tests have been completed at the H-3 and H-11 hydropads to better define this zone (by agreement with the State of New Mexico). Completed reports that deal specifically with the hydrologic role of fracturing in the Culebra include Haug et al., 1987, SAND86-7167 and LaVenue et al., 1988, SAND88-7002. Also, radar profiling of the surface area of the site to delineate possible lineaments was completed in September 1987; none were identified.

This topic was addressed in the "Results of H-3 Multipad Test" briefing to the NAS WIPP Panel by Beauheim and Tomasko on 5/12/86. It has also been discussed in the Beauheim presentations in October 1983, May 1985, November 1985, and December 1986.

3. Obtain in a timely manner operational experience with handling and placement of various types of waste packages at WIPP site.

Response: The NAS comment reflected their desire for WIPP to use few and less variety of waste package sizes and shapes to benefit operational smoothness. NAS proposed gaining operational experience with the various sizes and shapes available to select a few optimum sizes that would be best for WIPP Waste Handling Operations. Since then the project has progressed to the point where DOE has designed the TRUPACT II shipping container and committed to the state of New Mexico for its use to ship waste to WIPP. With the TRUPACT II shipping container, the vast majority of waste will be packaged as 7-packs of drums or in standard waste boxes. Only very small quantities of waste would be shipped in other than these two standard containers and would still be required to fit within the TRUPACT II shipping container (approximately 6 feet in diameter x 6 feet high). See DOE/WIPP 89-011, Chapter 3.0.

4. Keep the WIPP R&D program flexible to accomodate changes suggested by early WIPP results or other waste disposal technologies by other organizations.

Response: The program's response to WIPP results as well as to lessons learned from other technologies is reflected in each annual program plan. These changes are addressed in the summary reports for site characterization and technology development, SAND88-0157 and SAND88-0844, respectively. The NAS WIPP Panel and staff officer received copies of these reports and were briefed on changes as they occurred. The program also benefited from the interactions with the commercial salt repository program until its cancellation and from the interactions with the West German repository program as part of the FRG/US Bilateral Agreement. As reflected in the FOREWORD and the INTRODUCTION (p.I-1) of SAND89-0178, the R&D program will remain flexible. As feedback is obtained from experiments and performance assessment, plans will be modified.

5. Include special safety precautions in the procedures for handling defense high-level waste in the experimental R&D areas.

Response: Defense high-level waste experiments have been deleted from the WIPP Project effective September, 1988 per direction from DOE HQ.

6. Supplement the tests on waste form, package, overpack, and backfill with above-ground laboratory test.

Response: There has been a continuous laboratory test program addressing the salt/bentonite mixture properties of the backfill, brine sorption, nuclide sorption and solubilities, gas generation, effectiveness of backfill additives, and mechanical behavior of waste and backfill for modeling. These tests have guided and complimented the in situ tests being done at WIPP. The most recent presentation to the NAS WIPP Panel was in February, 1988. See DOE/WIPP 89-011, activities S.1.1.1 through S.1.1.5, S.1.2.6, and Appendix A. See SAND89-0178, activities 1.1.1 through 1.1.6, 1.2.7, and App. A.

7. Remedy existing deficiency in Safety Analysis Report procedures for fighting transient underground fires.

Response: The WIPP Waste Acceptance Criteria requires that all containers for emplacement at WIPP must be noncombustible. Any damaged containers will be overpacked before emplacement. This criterion is documented in WIPP/DOE - 069, Revision 3, "TRU Waste Acceptance Criteria for the Waste Isolation Pilot Plant". A study was completed in April of 1987 that indicated that the probability of a propagating or transient fire in the waste stacks was on the order of $3x10^{-8}$ per year. This probability is so low that this accident scenario can be eliminated from consideration in the FSAR as a non-credible event (based on DOE/AL Order 5481.1A). This study was presented to the NAS WIPP Panel in 1987.

8. Drop restrictions on permissible mass of organic materials per unit volume of waste from the gas generation criteria if relative humidity of the sealed enclosure at the repository is 60 percent or less.

Response: The NAS WIPP Panel considers issues 11 and 13 to be resolved. Therefore, 12 is also resolved because it relates to the case where the relative humidity is less than 60%, while the relative humidity is greater than 60% at the WIPP. Presentations were made on this subject in an Ad Hoc Brine Room Meeting with interested individuals from the the NAS WIPP Panel on 4/15/88 by D. Deal and J. Nowak ("Review of Ongoing Brine Inflow Studies"), on 12/6/88 by L. Brush ("Radioactive Waste Experiments - Laboratory Tests"), and on 6/7/89 by L. Brush ("Gas Generation").

9. Define the waste acceptance criteria for the defense high-level waste to be used in the experimental program.

Response: Defense high-level waste experiments have ben deleted from the WIPP Project effective September, 1988 per direction from DOE HQ.

10. Establish explicit mechanism for the transfer of information from experiments and information gathered during construction and development to final design.

Response: The mechanism used to transfer data from experiments and tests is the preparation and issue of formal reports. For example, the results of the SPDV program were published in a special report, and geologic data gathered since that time is published annually in the Geologic Field Data and Analysis Report. This data was used in final design and construction of the facility and is used to determine if modifications or changes are necessary.

Each formal report is distributed to public libraries located throughout the United States. All SNL reports are also sent to public libraries, to technical personnel internal and external to the Project, and the NAS Panel members.

Briefings are provided on a quarterly basis to the NAS WIPP Panel, the Environmental Evaluation Group, and to the New Mexico Environmental Improvement Division.

11. Determine if displacement of salt in the far field occurring as a result of long-term closure of excavations significantly increases the permeability of the bulk of the salt.

Response: There are three physical domains of interest surrounding the WIPP excavations:

a) The near-field domain, in which dilation, dewatering, and/or fracturing have occurred. The permeabililty of this domain appears to be several orders of magnitude larger than that of the undisturbed far-field domain. (see Stormont et al., 1987, SAND87-0176).

b) The far-field domain, in which hydrologic properties are "not significantly affected" by mechanical deformation. Measurements to date in this region indicate a very low halite permeability of 1 to 10 nanodarcies (see, for example, Nowak et al., 1988, SAND88-0122; Deal and Case, 1987, DOE-WIPP-87-008).

c) The far-field domain, as ultimately affected by subsidence. No measurements have been made to date in this region, since significant subsidence has not occurred. However, since deformation at these greater distances will be smaller than in areas already measured, no increase in permeabilities above values reported under (b) above are expected.

In addition, as described in SAND89-0178 and presented at the June, 1989 meeting with the WIPP NAS panel, there is an active ongoing program to investigate the variability of Salado permeability. See DOE/WIPP 89-011, activities S.3.1.x, S.3.2.x, and S.3.3.x. See SAND 89-0178 activities 3.1.x, 3.2.x, and 3.3.x.

12. Determine if sealing the repository is sufficient to preclude unacceptable increases in hydrologic conductivity across the repository horizon.

Response: The sealing program was presented to the NAS WIPP Panel on 8/85, 11/85, 9/86, and 3/88. The results of the WIPP seal evaluation have been documented in SAND87-3083 and SAND88-0844; both documents were distributed to the panel members and the staff officer. The evaluation determined that nothing has been discovered that would prevent the effective sealing of WIPP.

13. Delineate the through karst-type flow in the rustler aquifer near Nash Draw.

Response: The Project recognizes the potential for karstic processes near the WIPP site, as at the unique structure at hole WIPP-33. In addition, the Project has investigated the potential for karstic structures on the surface at the WIPP site itself. The conclusions of these studies are that:

a) Surficial depressions at and near the WIPP site, with the exception of the WIPP-33 structure, are not due to karstic activity, but are due to wind erosion (Bachman, 1985, SAND84-7178).

b) Within Nash Draw, evaporite karst is expressed by development of caverns in near-surface gypsums and anhydrites of the Rustler, not as caverns within the Rustler dolomites (see Bachman, 1987, SAND86-7078). Therefore, we conclude that karstic flow is real within Nash Draw, but that it effects portions of the Rustler other than the Rustler dolomites that dominate flow in the Site area.

ENCLOSURE 2: RESPONSES TO RECOMMENDATIONS CONTAINED IN 3/27/87 LETTER, FRANK L. PARKER, CHAIRMAN, NAS BOARD ON RADIOACTIVE WASTE MANAGEMENT, TO THOMAS ANDERSON, DOE.

1. This letter from the Board on Radioactive Waste Management forwarded the results of its review of "The Defense Waste Management Plan for Buried Transuranic Waste, Transuranic-Contaminate Soil, and Difficult to Certify Transuranic Waste."

Response: Attached is a copy of the response provided to the NAS originally. The DOE believes these recommendations were addressed in the revised Plan.

JUN 3 1987

Frank L. Parker, Ph.D., Chairman
Board on Radioactive Waste Management
National Research Council,
National Academy of Sciences
2101 Constitution Avenue
Washington, DC 20418

Dear Dr. Parker:

Thank you and the Board on Radioactive Waste Management for your review of the Defense Waste Management Plan for Buried TRU-Contaminated Waste, TRU-Contaminated Soil, and Difficult-to-Certify TRU Waste. I am enclosing a copy of the final report as submitted for printing for your information. The final printed document will be available in a few weeks, and copies will be provided to the Board. The Board's comments were very helpful in developing the final document.

I am also taking this opportunity to respond to the Board's comments contained in your March 27, 1987, letter, as follows:

It is not yet clear as to how the various hazardous waste laws and regulations apply to the Department of Energy (DOE) buried tru sites. Even the process for determining how these criteria would apply is felt to be beyond definition at this time. In response to your comment, discussion was added to the plan to note that specific criteria are not yet available and to identify the regulations and statutes to which each DOE site is currently responding.

The determination of which specific disposal options or alternatives may be evaluated at each site will be made during the process of site compliance with DOE Order 5480.14, CERCLA, RCRA and other applicable requirements. The alternatives used in the plan are intended to illustrate the possibilities, and they will be finalized based on site specific requirements developed during characterization and feasibility investigations.

Based on the comments received at the Board meeting on March 26, 1987, we have included additional information on responsibilities for studies, trade-off analyses, and decision recommendations, reviews and approvals. For your information, although DOE is responsible for the evaluations and decisions, state and Federal regulatory agencies, state and local governments, and interested parties will also be involved in the decision making process.

In further response to the Board's comments at our meeting, we have reviewed the potential for a category of "orphan" wastes to be created during the certification process. For your information, the plan notes that any waste which may remain at the end of the inventory workoff period will be specifically evaluated and a disposition method determined. Possibilities include development of a certification process for the waste, application to WIPP for a waiver of certification, or alternative disposal method (such as greater confinement disposal). DOE plans to address all retrievably stored and newly generated TRU waste, and have a plan for its disposal by the end of the inventory workoff period.

Finally, in regard to the Board's comment on the Maximum Contaminent Level Goals discussed at our meeting, we deleted reference to these requirements in the plan since it was felt that discussion in regard to the buried TRU sites was premature.

Again, thank you for your comments. The Board's comments were most helpful in our timely completion of the document.

Sincerely,

/S/
Thomas C. Anderson
DP/NAS Liaison
Office of Defense Waste
and Transportation Management

Enclosure

cc:
Peter Myers

bcc: J. Mathur, DP-123

Distribution:
so: Addressee
1bcc: DP124 RDR
1bcc: CHRON
2bcc: DP/MF
2bcc: DP-12
DP-124:TAnderson:ald:353-3253:6/2/87:WANG1937H

WJR:
File Code 5180.
Coordination
DOE-HQ [✓ yes] no ___ name Mathur org. DP-123
DOE-Field yes ___ [✓ no] name ___ org. ___
Interagency yes ___ [✓ no] name ___ org. ___
Other [✓ yes] no ___ name [illegible] org. [illegible]
Controversial Subject? yes ___ [✓ no]
Policy Issue? yes ___ [✓ no]
Budget Issue? yes ___ [✓ no]
Comments:

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| RTG SYMBOL | DP-124 |
| INITIALS/SIG. | TAnderson TDA |
| DATE | 6/2/87 |
| RTG SYMBOL | DP-123 |
| INITIALS/SIG. | JMathur |
| DATE | 6/2/87 |
| RTG SYMBOL | DP-124 |
| INITIALS/SIG. | CGeorge |
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ENCLOSURE 3: RESPONSES TO RECOMMENDATIONS CONTAINED IN 4/16/87 LETTER, KONRAD B. KRAUSKOPF, CHAIRMAN, NAS WIPP PANEL TO JOHN MATHUR, DOE.

The following two reports are referenced below: DOE 89-011, draft Management Plan for Performance Assessment and Operations Demonstration for the Waste Isolation Pilot Plant, April, 1989; and SAND89-0178, Preliminary Plan for Disposal-System Characterization and Long-Term Performance Evaluation of the Waste Isolation Pilot Plant, Sandia National Laboratories, S. G. Bertram-Howery and R. L. Hunter, editors, April, 1989.

1. Determine by calculations, the probable rate of release to the accessible environment of the important radionuclides in TRU waste on the assumption of no retardation due to sorption.

Response: Such calculations are explicitly included in a detailed sensitivity study of radionuclide transport within the Culebra (Reeves et al., 1987 SAND87-7105). In addition, both flow and transport properties within the Culebra were "degraded" from "expected" values as part of transport studies included in the DSEIS (see Lappin et al., 1989, SAND89-0462).

The conclusion, based on calculations contained in SAND89-0462, is that, while WIPP performance appears quite reliable if "expected" properties are controlling, it is possible for WIPP to not comply, if "degraded" properties are controlling, including both flow properties and greatly reduced sorption within the Culebra ($K_d$s near zero). The probabilities of property degradations must be factored into the probabilistic compliance measure before projections of compliance (or non-compliance) can be made.

2. Select drillholes for injection and recovery for which the history since drilling is well known with respect to the composition of the drilling fluid.

Response: This test has been cancelled, for a combination of budgetary and technical reasons. Technically, the conclusion was reached by Sandia and communicated to the NAS panel in September, 1987, that greater reliability could be gained by a combination of laboratory experiments and additional hydrologic work than could be gained by operation of a single sorbing-tracer experiment. From a budget point of view, funding was simply not available to perform both the sorbing-tracer test and the desirable additional hydrologic studies.

Detailed agreement was reached with the State of New Mexico (EEG) concerning "studies in lieu of the sorbing- tracer test." This agreement is documented as part of the Appendix to the Agreement for Cooperation and Consultation between US DOE and the State of New Mexico. The agreed studies, including the completion of a multipad interference test at the H-11 hydropad have largely been completed.

3. Recommend additional research in the study of the Culebra hydrology in different parts of the WIPP site to determine what phases are active sorbents for transuranic elements.

Response: This work is ongoing, as agreed to with the State of New Mexico as an activity "in lieu of the sorbing-tracer test," and as documented in SAND89-0178. The level of effort has been somewhat impacted by the effort required in completion of a hydrochemical facies report (Siegel et al., in press, SAND88-0196).

4. NAS urges using radionuclides rather than analog elements as sorbing tracers.

Response: See response to item 2.

5. Conduct tests at more than one hydro pad to give some sense of the possible variability of the formation in order to obtain statistically significant results.

Response: See response to item 2.

6. Conduct a field test accompanied by laboratory determinations of $K_d$ using chunks of dolomite from drill cores with their surfaces and fractures kept in a state as close as possible to natural conditions.

Response: Concerning operation of a field sorbing-tracer test, see response to item 2. Flow tests using both intact and fractured core are included in present planning, as described in SAND89-0178.

ENCLOSURE 4: RESPONSES TO COMMENTS AND RECOMMENDATIONS CONTAINED IN 3/3/88 LETTER, FRANK PRESS, CHAIRMAN, NATIONAL RESEARCH COUNCIL, TO JOHN S. HERRINGTON, DOE.

The following two reports are referenced below: DOE 89-011, draft Management Plan for Performance Assessment and Operations Demonstration for the Waste Isolation Pilot Plant, April, 1989; and SAND89 0178, Preliminary Plan for Disposal-System Characterization and Long-Term Performance Evaluation of the Waste Isolation Pilot Plant, Sandia National Laboratories, S. G. Bertram-Howery and R. L. Hunter, editors, April, 1989.

1. Establish a well conceived experimental program to reduce remaining uncertainties as a bases for conservative performance assessment.

2. Establish a comprehensive systematic experimental program to reduce uncertainties and support performance assessment as required by EPA.

3. Better define the planned experimental program for five years.

Response: Over the past two years the WIPP Performance Assessment Group has been refocusing the experimental program to supply the needs of the Performance Assessment program. This PA program has been designed on the same basis as that used by EPA in developing the Standard promulgated in 40 CFR Part 191 and appears to be the methodology described in the Guidance (Appendix B) to Subpart B of 40 CFR Part 191. A management plan describing this program has been published and was presented to the NAS on June 6, 1989. The management plan is based on a detailed plan prepared by Sandia National Laboratories. (See section 2.6, of DOE/WIPP 89-011 and all of SAND89-0178).

4. Only when the experimental work has reduced uncertainties about brine accumulation should additional waste containers be emplaced.

Response: The Performance Assessment process is iterative. During the last two years, estimates have been made of the impacts of brine in the rooms at WIPP during and after closure. Additional in situ permeability measurements have been and are being made and mathematical models of brine inflow are being improved. The results are that the Project is relatively certain that that the very low permeabilities that have been measured in situ will allow very little brine to flow into the room before it creeps closed. However, these very low permeabilities suggest that the gases that will evolve from the wastes over time may not dissipate through the host rock. The result is a possible gas problem for the WIPP. Experiments are planned to be conducted in the laboratory, in bins underground, and in room-scale alcoves underground to help quantify the gas problem. The uncertainties in brine inflow have been drastically reduced. The brine room experiment will provide observations in situ to test the current hypothesis. This subject was discussed with the NAS WIPP Panel 2/18/88. See DOE/WIPP 89-011, activities S.3.3.6, s.3.3.7, S.3.3.8, and S.3.3.9; and SAND89-0178, activities 3.3.5, 3.3.6, 3.3.7, and 3.3.8.

5. Experiments should be designed to lessen uncertainties not to verify preconceived ideas about probable results.

Response: The WIPP experimental program has shifted from one that identifies the important processes operating at and on the repository to one that develops the modeling tools and data needed for completing a performance assessment and evaluating compliance with 40 CFR Part 191. In the process, those experiments designed to test hypotheses have been modified to address hypotheses pertinent to the PA. Models and data are still needed for design and testing of the individual components of the system (e.g., panel seals). These models do attempt to develop the best designs based on preconceived ideas. See DOE/WIPP 89-011, section 2.6 and all of SAND89-0178.

6. Continually refine performance assessment calculations as experimental results are obtained to test confidence in achieving compliance with EPA standards.

Response: Performance Assessment is an iterative process. As new experimental results are acquired, the impacts on compliance with the EPA Standard are assessed. An example of this process for the WIPP program is given in the response to issue 4, above. As new calculations are completed, they will be reported to the NAS, NM EEG, and the scientific community via presentations, memoranda, and technical reports. Preliminary scoping calculations done by the Performance Assessment team were presented to the NAS WIPP Panel in September 1987. The second iteration of calculations was presented to the Panel in February 1988.

7. Develop multiphase models to describe behavior of complex fluids that may form as brine enters repository and gas is generated from waste.

Response: Consideration of the need for two-phase flow is a recent development and was discussed in a preliminary manner in SAND89-0178 (p. 2.24 and activity 3.2.6) and in DOE/WIPP 89-011 (p.2-15 and activity S.3.2.5) Preliminary two-phase calculations should be available near the end of FY89.

8. Investigate feasibility of possible technical "fixes" if the problem of fluids in the repository is serious.

Response: The review of the brine inflow concerns in 2/88 and subsequent tests have provided data that has consistently shown that brine inflow is not a major problem. SAND88-0112 and SAND89-0462 document these results. The brine inflow problem is continually being investigated as a significant input to the PA for WIPP.

See DOE/WIPP 89-011, activities S.1.1.1, S.1.2.1, S.1.1.2, and S.1.2.3; also see SAND89-0178, activities 1.1.1, 1.1.2, 1.1.4, 1.2.1, 1.2.3, and 1.3.1.

A much higher priority and a significantly greater effort will be directed toward the investigation of possible engineering enhancements. A special task force of selected technical experts will conduct this investigation.

## ENCLOSURE 5: RESPONSES TO RECOMMENDATIONS CONTAINED IN 12/30/88 LETTER, KONRAD B. KRAUSKOPF, CHAIRMAN, NAS WIPP PANEL, TO CRITZ GEORGE, DOE. TO CRITZ GEORGE, DOE.

The following two reports are referenced below: DOE 89-011, draft Management Plan for Performance Assessment and Operations Demonstration for the Waste Isolation Pilot Plant, April, 1989; and SAND89-0178, Preliminary Plan for Disposal-System Characterization and Long-Term Performance Evaluation of the Waste Isolation Pilot Plant, Sandia National Laboratories, S. G. Bertram-Howery and R. L. Hunter, editors, April, 1989.

1. Recommend a limited number of in-situ tests to observe closure rates around horizontal circular excavations.
2. Investigate the possible effect of differences in scale and geometry by experiment.
3. Determine closure around a 36-inch diameter hole to provide data on a scale intermediate between laboratory scale and full scale.
4. Undertake tests to observe time dependent deformations around holes to compare against numerical model.

Response: The WIPP Project is designing the intermediate-scale borehole test and developing a test plan. The preliminary plan was presented to the NAS WIPP Panel in 1988. See DOE/WIPP 89-011, activity S.3.3.2 and SAND89-0178, activity 3.3.1.

FRANCE30.690

# FRENCH CANDIDATE HLW SITE DRILLING DELAYED

## BACKGROUND

The French high-level radioactive waste disposal program focuses on evaluating the possibility of creating an underground repository in various rock types: sedimentary rocks (such as clays and salt); and hard rocks (such as granite and schist). The study phase of this site selection process, completed in 1986, compiled a national inventory of the possible sites based strictly on technical criteria.

In the Spring of 1987 the French government requested the National Agency for Radioactive Waste Management (ANDRA) to initiate field investigations at the following four preselected sites: 1) **Sissonne-Montcornet** - a clay formation in the Aisne perfecture (northern France); 2) **Bresse** - a salt formation in the Burgundy region of France (central-eastern France); 3) **Neuvy-Bouin** -a granite formation in the Deux-Serves region (central-western France); and 4) **Serge** - a shale formation in the Maine-et-Loire prefecture in western France. These four sites are being investigated by ANDRA for development of an underground laboratory to test disposal of vitrified high-level waste from reprocessing as a precursor to selection of a single test site.

Since the announcement of these four sites created significant public reaction, the government increased effort through ANDRA to inform, discuss, and describe the investigation program. Despite repeated interruptions by protests, the ANDRA reconnaissance program for the four sites was completed in 1988. The preliminary results of the geophysical studies confirmed the general geologic structure predicted during the preselection phase.

The first deep drilling (1000 m) for seismic calibration was accomplished in clay (at the **Sissonne-Montcornet** site), in January 1989, and the first core drilling achieved in October 1989 (1123 m). Two other drillings for hydrologic purposes (330 m and 220 m) were being implemented with pumping tests.

## CURRENT STATUS

On October 18, 1989 the government directed ANDRA to perform field studies at the other sites. However, ANDRA was unable to proceed with exploratory work at these sites due to local opposition. The attitude of the local populous around these three sites to maintain a dialogue with ANDRA was much different then at the **Sissonne-Montcornet** site. On January 17, 1990 several special police were injured in clashes with antinuclear activists near Angers. The demonstrators were protesting the ANDRA attempt to initiate exploratory drilling at the candidate site in nearby Serge township. The Serge protests have been the most violent in a series of demonstrations against the ANDRA attempt to explore these four sites. Although exploratory activities were being continued at the Sissonne-Montcornet site, work at the other three sites was voluntarily suspended by ANDRA on January 23 pending the outcome of a meeting between legislators from the Maine-et-Loire region and Prime Minister Michel Rochard. On February 9 Prime Minister Rocard imposed a moratorium of at least 12 months on test drilling at all four sites to: 1) establish a dialogue with local populations opposing the projects; and 2) to have the national waste management program reassessed by independent experts together with politicians and all interested parties. The moratorium will delay the single site selection, repository decision, and repository operation to beyond 1992, 2000, and 2010, respectively, depending on the governments decision to modify the site selection program.

The College of Prevention of Technological Risks, an independent advisory body, was requested by Prime Minister Rochard to study the high-level waste question. Other groups have also expressed interest in the overall reassessment of the program, focused generally on one of two options not currently supported by the government: 1) above ground storage of high-level and actinide wastes (rather than deep geologic disposal); and 2) development and implementation of "advanced reprocessing" prior to disposal.

Senator **Ford**. I believe the Energy Committee and several colleagues went to France not too long ago. The French talked about how they will go ahead and build a nuclear generating facility above ground and all that kind of stuff and they do not worry about it too much. And they had storage and they were not worried about that too much.

And after the trip the Senators came back bragging about how well the French were doing, and now I hear from you that France is in trouble. Are they in the same kind of trouble we are? Tell me where they were four years ago and where they are now, if you can.

Secretary **Watkins**. Yes, sir. Apparently—and I do not have the details of the current issues in France—I was just reading the newspaper—but it is my understanding that they have been derailed for about one year in their high level repository work because of environmental pressures coming in from a variety of possible sites that they were considering.

Senator **Ford**. When you say environmental pressures, is that groups that do not want it there?

Secretary **Watkins**. Yes, sir, basically. The French public in the region of the possible sites.

[The information follows:]

Table 1 includes a State-by-State listing of the number of reactor sites that will require either new or additional out-of-pool storage facilities through the year 2010, and the estimated costs of these facilities. Table 2 provides information, by State, on the estimated quantities of waste in excess of pool capacities.

With regard to the issue of payments by utilities both into the Nuclear Waste Fund and for their own out-of-pool storage facilities, the Nuclear Waste Policy Act assigns owners and generators of spent nuclear fuel and high-level radioactive waste primary responsibility to provide for, and pay the costs of, storage until the wastes are accepted for disposal by the Department. The Department has stated its intention to initiate the waste acceptance process as soon as practicable after a facility commences operation. Until that time, the owners and generators will continue to be responsible for storage consistent with the provisions of the Act. Should utilities be required to expand on-site storage to continue their operations, these costs would, depending on the actions of their regulatory commissions, be passed on to the ratepayer and would be in addition to their financial responsibilities to the Nuclear Waste Fund.

TABLE 1. OUT-OF-POOL STORAGE REQUIREMENTS 1998 - 2010
COST OF OUT-OF-POOL STORAGE

| | NUMBER OF REACTOR POOLS WITH OUT-OF-POOL STORAGE REQUIREMENTS | | | COST OF OUT-OF-POOL STORAGE REQUIREMENTS (THOUSANDS OF $) | | |
|---|---|---|---|---|---|---|
| STATE | BEFORE 1998 | 1998 TO 2010 | THROUGH 2010 | BEFORE 1998 | 1998 TO 2010 | THROUGH 2010 |
| ARIZONA (3)[1] | 0 | 3 | 3 | $0 | $12,782 | $12,782 |
| ARKANSAS (2) | 1 | 1 | 2 | $616 | $22,946 | $23,562 |
| CALIFORNIA (3) | 1 | 0 | 1 | $11,550 | $41,041 | $52,591 |
| CONNECTICUT (3) | 2 | 1 | 3 | $14,938 | $26,796 | $41,734 |
| FLORIDA (4) | 1 | 2 | 3 | $7,777 | $15,323 | $23,100 |
| GEORGIA (2) | 0 | 1 | 1 | $0 | $18,172 | $18,172 |
| ILLINOIS (9) | 2 | 4 | 6 | $13,937 | $90,706 | 104,643 |
| IOWA (1) | 0 | 1 | 1 | $0 | $4,312 | $4,312 |
| LOUISIANA (2) | 0 | 2 | 2 | $0 | $16,016 | $16,016 |
| MAINE (1) | 1 | 0 | 1 | $693 | $12,474 | $13,167 |
| MARYLAND (2) | 1 | 0 | 1 | $12,936 | $26,488 | $39,424 |
| MASSACHUSETTS (1) | 1 | 0 | 1 | $2,387 | $10,241 | $12,628 |
| MICHIGAN (5) | 4 | 0 | 4 | $8,393 | $62,678 | $71,071 |
| MINNESOTA (2) | 1 | 0 | 1 | $8,162 | $19,558 | $27,720 |
| MISSISSIPPI (1) | 0 | 1 | 1 | $0 | $12,397 | $12,397 |
| MISSOURI (1) | 0 | 1 | 1 | $0 | $2,926 | $2,926 |
| NEBRASKA (2) | 1 | 1 | 2 | $1,309 | $13,629 | $14,938 |
| NEW JERSEY (2) | 1 | 1 | 2 | $77 | $7,931 | $8,008 |
| NEW YORK (3) | 1 | 2 | 3 | $3,388 | $30,569 | $33,957 |
| NORTH CAROLINA (4) | 2 | 2 | 4 | $17,556 | $36,729 | $54,285 |
| OHIO (1) | 0 | 1 | 1 | $0 | $9,394 | $9,394 |
| OREGON (1) | 0 | 1 | 1 | $0 | $12,859 | $12,859 |
| PENNSYLVANIA (8) | 2 | 4 | 6 | $3,542 | 103,103 | 106,645 |
| SOUTH CAROLINA (4) | 3 | 0 | 3 | $31,185 | $46,585 | $77,770 |
| TENNESSEE (4) | 0 | 2 | 2 | $0 | $23,947 | $23,947 |
| VERMONT (1) | 0 | 1 | 1 | $0 | $6,468 | $6,468 |
| VIRGINIA (4) | 1 | 1 | 2 | $20,405 | $39,116 | $59,521 |
| WASHINGTON (1) | 0 | 1 | 1 | $0 | $16,632 | $16,632 |
| WISCONSIN (3) | 1 | 1 | 2 | $7,777 | $31,416 | $39,193 |
| TOTALS (80) | 27 | 35 | 62 | $166,628 | $773,234 | $939,862 |

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[1] The numbers in parenthesis represent the number of reactors served by the pools.

TABLE 2. OUT-OF-POOL STORAGE REQUIREMENTS 1998 - 2010
METRIC TONS OF OUT-OF-POOL STORAGE

| | NUMBER OF REACTORS WITH OUT-OF-POOL STORAGE REQUIREMENTS | | | * MTUs OF OUT-OF-POOL STORAGE REQUIRED | | |
|---|---|---|---|---|---|---|
| STATE | BEFORE 1998 | 1998 TO 2010 | THROUGH 2010 | BEFORE 1998 | 1998 TO 2010 | THROUGH 2010 |
| ARIZONA (3)[2] | 0 | 3 | 3 | 0 | 166 | 166 |
| ARKANSAS (2) | 1 | 1 | 2 | 8 | 298 | 306 |
| CALIFORNIA (3) | 1 | 0 | 1 | 150 | 533 | 683 |
| CONNECTICUT (3) | 2 | 1 | 3 | 194 | 348 | 542 |
| FLORIDA (4) | 1 | 2 | 3 | 101 | 199 | 300 |
| GEORGIA (2) | 0 | 1 | 1 | 0 | 236 | 236 |
| ILLINOIS (9) | 2 | 4 | 6 | 181 | 1,178 | 1,359 |
| IOWA (1) | 0 | 1 | 1 | 0 | 56 | 56 |
| LOUISIANA (2) | 0 | 2 | 2 | 0 | 208 | 208 |
| MAINE (1) | 1 | 0 | 1 | 9 | 162 | 171 |
| MARYLAND (2) | 1 | 0 | 1 | 168 | 344 | 512 |
| MASSACHUSETTS (1) | 1 | 0 | 1 | 31 | 133 | 164 |
| MICHIGAN (5) | 4 | 0 | 4 | 109 | 814 | 923 |
| MINNESOTA (2) | 1 | 0 | 1 | 106 | 254 | 360 |
| MISSISSIPPI (1) | 0 | 1 | 1 | 0 | 161 | 161 |
| MISSOURI (1) | 0 | 1 | 1 | 0 | 38 | 38 |
| NEBRASKA (2) | 1 | 1 | 2 | 17 | 177 | 194 |
| NEW JERSEY (2) | 1 | 1 | 2 | 1 | 103 | 104 |
| NEW YORK (3) | 1 | 2 | 3 | 44 | 397 | 441 |
| NORTH CAROLINA (4) | 2 | 2 | 4 | 228 | 477 | 705 |
| OHIO (1) | 0 | 1 | 1 | 0 | 122 | 122 |
| OREGON (1) | 0 | 1 | 1 | 0 | 167 | 167 |
| PENNSYLVANIA (8) | 2 | 4 | 6 | 46 | 1,339 | 1,385 |
| SOUTH CAROLINA (4) | 3 | 0 | 3 | 405 | 605 | 1,010 |
| TENNESSEE (4) | 0 | 2 | 2 | 0 | 311 | 311 |
| VERMONT (1) | 0 | 1 | 1 | 0 | 84 | 84 |
| VIRGINIA (4) | 1 | 1 | 2 | 265 | 508 | 773 |
| WASHINGTON (1) | 0 | 1 | 1 | 0 | 216 | 216 |
| WISCONSIN (3) | 1 | 1 | 2 | 101 | 408 | 509 |
| TOTALS (80) | 27 | 35 | 62 | 2,164 | 10,042 | 12,206 |

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[2] The numbers in parenthesis represent the number of reactors served by the pools.

* metric tons Uranium

Concurrence on Insert for the Record from the hearing before the Senate Energy and Natural Resources Committee on March 2, 1990.

3/28/90

Samuel Rousso, Acting Director
Office of Civilian Radioactive Waste Management

Date

Senator **Ford**. No different than Nevada.

Secretary **Watkins**. It is no different anywhere else, really, Senator Ford. I think I was mentioning earlier, before you came in, to the chairman that I think we have somewhat of an obligation being the first, you might say, in nuclear power in the world to set kind of a model and example, and this is why I hope that I can be successful in moving not only the defense waste site in New Mexico in a proper way, but also to break through the obstacles that we have at Yucca Mountain, and I think we will have international interest in that when we do it. And I think it will help the French and other nations to get through some of the environmental barriers that are being thrown up now much as they were in this country for the past several years.

Senator **Ford**. You are going to send us, I think, a report on the sites where utilities are depositing their waste in situ, and what that means and what states are having problems or will have problems.

Can you without too much trouble find out what the fuel adjustment clause might contain as it relates to the additional cost and to the rate payer as it relates to the sites or the expansion of those sites?

Secretary **Watkins**. The chairman has asked me, Senator Ford, to send to the committee a detailed cost analysis and breakout of what that would be were we not to achieve our objectives in this plan here, and we plan to do that, and we would be pleased to provide you a copy of that.

Senator **Ford**. Fine. I was just interested in how much that was costing when we began to look.

I think Senator McClure asked the question that we are making a charge and then we are also paying more otherwise, and so there is double jeopardy here, and I think that the fuel adjustment figure might give us at least the handle on some of the additional cost and that ought to be available, I guess.

We have gone to the Public Service Commission and others may call it the Rate Utility Commission or whatever it might be, but those various commissions ought to be able to see this.

Secretary **Watkins**. I think it is a very useful exercise that we go through this and provide cost that to the committee. I think it is the first time it will have been done. We now have sufficient handle on the timing and everything to go ahead and lay that out in some detail and we do have very specific, reactor site by reactor site schedule on that. I think we can give you a very good cost benefit analysis on why it would be unfair to ratepayers.

Senator **Ford**. In closing, Mr. Chairman, I want to follow up a little bit on what the Admiral said. He said everybody is down on nuclear. Everybody is down on fossil. And it does not leave us very much, Admiral, as I see it. Little support is left to help our economy to keep us competitive, and I find in a lot of areas and information I get on a hot day, we are just about at full capacity, everything we have got on a cold day when everything is wide open. And we are praying for not quite severe cold or heat.

Then we hear the utilities are in Catch-22. If they overbuild, for instance, they get criticized for that. If they do not have enough, they are criticized for that.

Now, we are getting ready to come with a clean air bill that is going to add more on than some of them anticipated.

We have new utilities that are combined with new source standards, and they will be 0.3 and 0.25, and you cannot even get them grandfathered, and they will be on board in a year or so, and we wish they were on board in 6 months. So, there are a lot of problems out there.

And, as you say, education. When you start talking about ADA—when I grew up, I thought that was American Dairy Association. When I got up here, it was something else.

And, you know, you have just got to watch this when they start talking about various and sundry things. That is when I think you might help us instead of using the abbreviation, you just spell it out, and it would be helpful.

I know every once in a while I get mixed up on all of the letters and, you know, the wham, thank you, ma'am. You know all of these things that you get out there that you have to look at.

So, Mr. Chairman, I think this has been a very good hearing, and I am sorry I was a little bit late. But, Admiral, I compliment you on what you are doing, the staff you have assembled, and hopefully we will get your negotiator on board and you can get to work on this MRS without bringing it back to us to have to make a hard decision. And we were into that, as you know, and that was one of the things that I became very nervous about.

And so I thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Ford.

Admiral, before you go, let me ask you about this proposed compromise in the Fernald Ohio settlement. I received your letter on that where you proposed to pay I think it is $73 million in settlement of that suit there.

My concerns are two or three: First, that the Department has undertaken to recompense the contractor for matters that are simple negligence in day-to-day operations as opposed to the Price-Anderson kind of event. That is number one.

Second, that we have undertaken apparently to recompense him for punitive damages. One principle of law that is inviolate in the Federal system so far as I know is that the Federal Government does not pay punitive damages, and yet we are by this settlement at least, agreeing to pay these punitive damages.

And, third, I am wondering what kind of total bill we are talking about and what kind of precedent this sets. I understand that this is simply the first Fernald suit, that there is another one pending for $1.7 billion, and I wonder if we are setting any precedent here that could cost the Federal Government billions of dollars.

Senator FORD. Could I also add, Mr. Chairman, since that is near my State and Ohio is not here, I believe you have offered to make that into installments plus interest?

Secretary WATKINS. There are dollars available, Senator Ford, in providing reprogramming, but obviously we are going to have to come in with adjustments in 1991 and so forth if, in fact, this is the will of the Congress.

Senator FORD. There is no guarantee to these people out there in this first suit. And, therefore, they are keeping their suit in court.

Secretary WATKINS. Well, $73 million is an agreed to negotiation to avoid a lengthy trial. I will have to say in some honesty that the Department with a lack of attention and some of the epidemiological data base work, some of the dose reconstruction work and so forth, has placed themselves in a difficult position. I think that is why we are going through this kind of painful evolution. We do not particularly like it, but I think that it would be inappropriate for me to discuss—I am not the general counsel—in any great detail the chairman's concerns.

I share some of those concerns, but we would like to probably answer your question in some legal detail in a more appropriate way than this forum because it is—you have raised a very important issue to us, and we know about it. We are concerned about it, too, and we are trying to make the best of things that happened many years ago. We are talking—some of these things are 20 years ago. We are trying to deal with them now, looking back at a time when records were poor and it is very difficult to provide a good, strong underpinning for a case when you get into psychological damage and so forth, particularly when you do not have a good, solid data base to work from.

The CHAIRMAN. I do not mean to imply that I necessarily oppose this. I simply want to find out more information about it, and I am concerned about what kind of precedent it sets and what the liability for cancer phobia and decreased property values might be around the country.

Secretary WATKINS. I think it would be very important if I could have my general counsel come and talk with your key staff person, Mr. Chairman, and then from that discussion perhaps provide you any more detailed answers to your questions.

The CHAIRMAN. If you leave that up to local courts and local juries to decide on the unprovable, on whether they would give their neighbors a pot of gold, I think there will likely be a lot of pots of gold out there around the country which you cannot prove or disprove.

Secretary WATKINS. I think it is a valid, very valid concern, and I think we have to understand the details of this particular arrangement, and I would like to have someone come up and talk to your counsel to do that.

The CHAIRMAN. I would very much like for them to do that and, as I say, I do not imply opposition to this. I just want to voice concern.

Secretary WATKINS. Well, we are not happy about it, as you know, Mr. Chairman. We try to do the best we can. We walked into the situation when we took over, and I think we had a very good team working this program as best it could be worked. Under the circumstances I hope it does not become precedent setting. I hope it can be constrained to the specific circumstances of this particular case and that we do not have to let it wander off into another growth of 30,000 lawyers in the country to handle the other things that might come out of it.

It is an important issue, and I am glad you raised it. We will try to work with you to see if perhaps we need some other guidance or we ought to be moving in some other direction on these cases, and you are right.

There is another case for $1.5 billion or more that has now been brought to bear against us.

The CHAIRMAN. Thank you very much, Admiral. We appreciate your testimony.

[Whereupon, at 11 a.m., the hearing adjourned.]

# APPENDIXES

## APPENDIX I

## Responses to Additional Questions

POST-HEARING QUESTIONS AND ANSWERS

ADMIRAL JAMES D. WATKINS
SECRETARY
UNITED STATES DEPARTMENT OF ENERGY

MARCH 2, 1990

## QUESTIONS FROM SENATOR JOHNSTON

### ACCESS TO YUCCA MOUNTAIN SITE

| | |
|---|---|
| QUESTION 1: | Your testimony indicates that in January 1991 the Department will have all its plans in place and will be ready to begin site characterization at Yucca Mountain.<br>-- What is the Department doing to ensure that the technical program will be ready in order to meet that date? |
| ANSWER 1: | DOE and the Nuclear Regulatory Commission (NRC) have discussed the prerequisites to resumption of field work at Yucca Mountain. DOE has stated that no new ground disturbing field work will begin until the NRC has reviewed detailed test plans (study plans) and accepted the required elements of the DOE Quality Assurance (QA) program.<br>DOE has submitted study plans to the NRC for trenching related to the characterization of faulting at the proposed surface facilities site and trenching and sampling related to calcite-silica deposits. NRC has informed DOE, by letter, that its review indicated no objections with any of the work proposed. Other site investigations, referred to as ongoing monitoring and ongoing non-ground disturbing field work, continue at and near the Yucca Mountain site. DOE's sample management facility, which stores |

**ANSWER 1 (Cont'd)**

rock core and soil samples under controlled conditions, became fully operational in 1988. Additionally, DOE is continuing prototype drilling off site to support dry drilling and dry coring for future scientific investigations.

NRC currently is reviewing 6 study plans and, during the next several months, DOE plans to complete and submit to NRC additional study plans for review. In the event that State permits are issued, this additional field work will be initiated subject to NRC review of the study plans. DOE has established a quality assurance program intended to meet the NRC's requirements and will conduct an audit of the Headquarters program in June 1990, and the Project Office program in July. Both the NRC and the State of Nevada will participate as observers in the audit. Based on successful completion of the audits, DOE hopes to have its quality assurance program in place by August 1990, and to have received NRC acceptance by September 1990.

## QUESTIONS FROM SENATOR JOHNSTON

### ACCESS TO YUCCA MOUNTAIN SITE

QUESTION 2: **Your schedule milestone of January 1991 assumes that the pending litigation between the Department and the State of Nevada will be resolved and that the State will issue the necessary environmental permits.** Right now, you are locked in battle with Nevada because of the state's refusal to issue these permits.

a. What is your understanding of the court's schedule for consideration of these issues?

b. How will delays in the litigation delay the overall schedule for the opening of a repository? Is every year of delay in the court mean a year of delay in the opening of a repository?

c. How will delay in the repository program affect the need for an MRS? Isn't it true that the longer a repository is delayed, the more important it will be to look for sites for an MRS as an interim facility to accept spent fuel?

ANSWER 2a: At the present time, it is difficult to predict the duration of pending litigation before the Judge in the United States District Court of Nevada (U.S. v. Nevada). However, on March 2, 1990, DOE filed its opposition to the State's motion to stay all proceedings in the District Court pending a final decision in the State's suit against DOE in the U.S. Court of Appeals for the Ninth Circuit. The State of Nevada replied on March 12, 1990, with a brief and an answer. A hearing on the Plaintiff's motion to stay has been set for May 16, 1990.

ANSWER 2a: (Cont'd)

Regarding the Ninth Circuit's schedule for the Nevada v. U.S. DOE suit, the present schedule provides that Nevada's opening brief is due April 26, 1990; DOE's response brief is due May 28, 1990; and Nevada's reply is due June 11, 1990. No date has been set for oral argument, but this briefing schedule suggests that the case may be argued in early September.

ANSWER 2b: A delay attributed to the litigation process would likely begin to delay the repository operation on as much as a day-to-day basis beginning sometime in 1991 with an accelerated exploratory shaft facility construction schedule. In addition, time lost at the head-end of such a complex process clearly reduces the Department's ability to respond to contingencies which one can certainly expect. Any delays have the potential for delaying the opening of a repository.

ANSWER 2c: A Monitored Retrievable Storage (MRS) facility as an integral part of the waste management system can provide valuable benefits to the overall operation of the system. The MRS can serve as a flexible link between the reactors and the repository to accommodate variations in the rate

ANSWER 2c: (Cont'd)

of waste acceptance. In addition to the significant benefits to waste management system operations, the MRS could provide the capability to begin accepting waste as early as 1998. However, under the current linkages contained in the Nuclear Waste Policy Amendments Act of 1987, an MRS site cannot be selected until the repository site is recommended to the President. Under the current schedule for the repository, the repository site recommendation will be submitted to the President in 2001. Accordingly, under current law, delays in the repository program will have the effect of increasing storage of spent fuel at power reactor sites and delay the acceptance of spent fuel by the Federal Government at an MRS site.

## QUESTIONS FROM SENATOR JOHNSTON

### SURFACE-BASED TESTING vs. EXPLORATORY SHAFT

QUESTION 3: In 1987, when we passed the nuclear waste bill, we were told that we must sink an exploratory shaft in order to determine whether or not a site would be suitable. At that time, Congress rejected the proposal of first doing surface-based work at 3 sites and then using that information to make a determination of the best site before sinking a shaft. We rejected that proposal because we were told that you were not likely to find disqualifying information until you sunk a shaft.

In your plan, you are proposing to conduct at least a year of surface-based testing first before sinking a shaft.

a. Is it necessary to delay the sinking of a shaft until November 1992?

b. Can't these two efforts -- surface work and the shaft -- proceed in parallel?

ANSWER 3a: Several factors have led to the current schedule for the start of Exploratory Shaft Facility (ESF) construction. DOE currently is qualifying its Quality Assurance program, further developing its design control process and project management infrastructure, and refining its requirements documents. These activities are scheduled to be completed prior to January 1, 1991.

DOE initiated several evaluations related to 1) alternative ESF designs, configurations, and construction techniques recommended by the Nuclear Waste Technical Review Board and the

ANSWER 3(a) (Cont'd)

Nuclear Regulatory Commission (known as the ESF alternatives study), and 2) the prioritization of surface-based testing activities to focus on early assessment of site suitability.

Following completion of the ESF alternatives study, the ESF Title II design phase will be restarted. This is currently scheduled for March 1991. In turn, initiation of long lead procurements, such as the shaft headframe(s), and contractor negotiations are constrained by the completion of the ESF Title II design. Current schedules estimate completion of all prerequisites for ESF construction such that site preparation can begin in June 1992. DOE currently is studying alternatives to advance the start of site preparation and shaft construction. We are hoping to advance the schedule for starting the ESF by 6-9 months.

ANSWER 3b: Surface-based testing and ESF development will proceed in parallel once prerequisites for the ESF are completed. It is not the DOE's intent to constrain ESF construction by requiring a specific interval of surface-based testing as a prerequisite.

## QUESTIONS FROM SENATOR JOHNSTON

### SCHEDULES

QUESTION 4: You stated in your testimony that one of your principal findings from your review of the waste program was that the schedules were completely unrealistic. You have now revamped those schedules to put them on more realistic footing.

a. How comfortable do you feel with your ability to meet the 1998 commitment to utilities to take spent fuel?

b. Do you believe that the Department has a legal commitment to accept title to spent fuel in 1998?

c. How comfortable do you feel with your ability to meet your target opening date for a repository in 2010?

ANSWER 4(a): One of the principal objectives of my reassessment of the program was the development of schedules that are based on (1) the identification of all the activities that must be performed in the development of each system element, with emphasis on the activities that are on the critical path; and (2) a realistic assessment of the time required to complete every activity. The MRS schedule was developed by using engineering judgment and experience in the construction of similar facilities, and by dividing major milestones into small blocks for

ANSWER 4(a) (Cont'd)

which durations can be assigned with greater confidence. Thus, the most rigorous portion of the MRS schedule is the portion related to design and construction, with greater uncertainty being attached to the siting and licensing portion. The MRS schedule is based on the assumption that a volunteer host is found for the facility, that the statutory schedule linkages to the repository are changed and that the licensing process can be expedited.

Although the milestones in the schedule have been defined as rigorously as possible on the basis of current plans and currently available information, it must be recognized that certain milestones are beyond DOE's control. However, on the whole, I am reasonably confident that our schedule can be met.

ANSWER 4(b): The Nuclear Waste Policy Act of 1982 (NWPA) required the Department to begin taking title to spent nuclear fuel and high-level radioactive waste after the start of repository operations, which were expected to begin no later than January 31, 1998. In November 1989, I provided

ANSWER 4(b) (Cont'd)

you the "Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program" which documented the results of an extensive review that, among other things, showed a significant slip for the expected start of repository operations. The report also identified the initiation of a three-point action plan to promote the Department's ability to achieve its goals and milestones. This plan includes steps to make possible the goal of accepting waste by 1998.

ANSWER 4(c): Although the milestones in the schedule have been defined as rigorously as possible on the basis of current plans and currently available information, certain milestones such as issuance of permits are beyond DOE's control. The dates for the accomplishment of other milestones are impacted by external actions such as litigation. Further, scientific findings may significantly alter the schedule.

Conversely, DOE may be able to accelerate the achievement of certain long-term milestones through alternative strategies.

ANSWER 4(c) (Cont'd)

Thus, DOE remains committed to seeking improvements in the schedule while satisfying all technical and regulatory requirements.

On balance, I have reasonable confidence in the schedule.

## QUESTIONS FROM SENATOR JOHNSTON

### CONTRACTS

QUESTION 5: You are taking initiatives to restructure the internal management of the waste program and to streamling contractual arrangements. As you know, I have long been concerned about the burdensome management structure and duplicative contractual arrangement. I applaud your efforts to deal with these issues.

-- How long will it take you to complete this restructuring and streamlining of contracts?

ANSWER 5: Restructuring the internal management of the Civilian Radioactive Waste Management Program has begun, with the formation of task groups to implement my Near-Term Decision Plan and the Scientific Investigation Plan for Yucca Mountain. After his confirmation and swearing-in, the new Director of the Office of Civilian Radioactive Waste Management (OCRWM) will review the organizational and contract structure and make further changes necessary for the effective and efficient accomplishment of OCRWM's mission.

The ongoing review of OCRWM contractors is aimed at eliminating duplicative activities and making more efficient use of contractors by improving the integration of their efforts. This review, coupled with an independent assessment by an

ANSWER 5 (Cont'd)

independent management consulting firm, should result in increased efficiencies in the program's use of contractors. Appropriate follow-on direction to any contractors resulting from these reviews should be completed by the end of the current fiscal year.

## QUESTIONS FROM SENATOR JOHNSTON

### CONTRACTS

QUESTION 6: In August 1989 a judge in the U.S. Claims Court ruled invalid the Department's award of a $100 million a year contract to Bechtel. The judge ruled further that the contract could only be awarded to TRW. There have recently been news reports that the Department was negotiating with both Bechtel and TRW over the contract award. As a result, the third contractor has now filed suit in claims court to prevent any award of the contract to Bechtel and to stake claim itself to award of the contract. In light of all this, it seems to me that the best approach might be to abandon the contract altogether.

a. What are the benefits of such a contract?

b. Shouldn't this job actually be carried out by the Department, not by a contractor?

c. Could the Department obtain sufficient talent in-house to carry out this job?

d. What is the status of this contract award? Does the Department now have plans to award a contract to TRW, or someone else?

ANSWER 6a: A management and operating contractor will provide the expertise that is necessary to implement this complex program. For example, existing contractors do not have the systems engineering and integration expertise that is vital to the program. In addition, present contracts are insufficient to support the achievement of a 1998 Monitored Retrievable Storage startup.

ANSWER 6b: No. The Department, in terms of Federal employees, does not now have nor should it be expected to have the necessary resources to carry out the multitude of highly specialized technical tasks needed for this

ANSWER 6b cont'd) type of program. However, the Department does have the talent to manage contractor resources in implementing programs such as this.

ANSWER 6c: It is unlikely that the Federal Government could assemble, under existing constraints (e.g., salaries and manpower limitations), a sufficient quantity of talent to carry out this complex job.

ANSWER 6d: Although the Department is prepared to appeal the Claims Court decision, the litigants (Bechtel and TRW) have agreed to a delay in the briefing schedule for the appeal in order to determine whether a settlement of this case is possible. We are presently talking to those parties.

## QUESTIONS FROM SENATOR McCLURE

QUESTION 1: On page 4 of your statement you conclude that the program needs a "permanent" director, and you define that individual essentially as someone confirmed by the Senate. Do you think it would be advisable that we amend the statute to provide for such a permanent person? What is your opinion of a proposal to confirm an individual for a period of time longer than what the statute now permits. Would you be willing to draft such an amendment to be forwarded to us?

ANSWER 1: President Bush has nominated Dr. John Wesley Bartlett to this post, and I appreciate the fine spirit of cooperation by Chairman Johnston and this Committee in scheduling an early confirmation hearing and for your favorable recommendation of this nomination to the Senate. My use of the word "permanent" was meant to identify a Director who had been chosen by the President and confirmed by the Senate. Whether a proposal of longer tenure for the program director would be a useful way to achieve better stability and waste management continuity is a policy decision that may be better reserved to the Congress. The Administration would not propose such a change at this time.

## QUESTIONS FROM SENATOR MCCLURE

QUESTION 2: You indicate in your statement that you have implemented a plan to "refocus site characterization studies on adverse conditions...by conducting surface-based testing and deferring exploratory shaft construction for three years."

Please be specific in describing these studies and why they would require up to a 3-year delay in construction of an exploratory shaft.

Can't some (or all) of these studies be conducted simultaneously with work on the shaft?

Wouldn't this save time and money?

Are we now putting the "cart in front of the horse" in terms of which work should reasonably be done first, or was that in fact the way it was prior to your implementation of this new plan?

ANSWER 2: The shift to emphasize surface-based testing as a tool for early evaluation of site suitability has not required the delay in Exploratory Shaft Facility (ESF) construction. Delays have resulted from permit acquisition, as well as efforts by DOE to qualify its Quality Assurance program, further develop its design control process and project management infrastructure, and refine its requirements documents. These delays provided an opportunity to conduct evaluations resulting from internal program reviews and suggestions from the Nuclear Regulatory Commission, the Nuclear Waste Technical Review Board, and the State of Nevada. These evaluations address: 1) alternative ESF designs, configurations, and construction techniques; and 2) the prioritization of surface-based testing

ANSWER 2 (Cont'd)

activities to focus on early assessment of site suitability.

In any event, surface-based testing and ESF development will proceed in parallel once prerequisites for the ESF are completed. It is not DOE's intent to constrain ESF construction by requiring a specific interval of surface-based testing as a prerequisite. We are, in fact, currently looking at ways we may be able to advance the start of ESF construction.

## QUESTIONS FROM SENATOR McCLURE

QUESTION 3: By 1998, electric utility customers will have paid $8-10 billion to DOE for the waste program. If DOE does not meet its commitment to begin accepting fuel by that date, utilities will face additional costs for at-reactor storage. Have you considered any options to assist utilities with the cost of this additional storage, should there be no Federal facility available at that time?

ANSWER 3: In February 1989, the Department issued the Final Version Dry Cask Storage Study which considered: 1) whether the Department is authorized under the Nuclear Waste Policy Act (NWPA) to provide monies from the Nuclear Waste Fund (NWF) for dry at-reactor storage; and 2) when and under what conditions it would be appropriate to use the NWF for such activities.

Briefly, the study concluded that the NWPA does not appear to authorize expenditures from the NWF for providing interim storage, and, as stated in section 111(a)(5) of the NWPA, "the generators and owners of high-level radioactive waste and spent nuclear fuel have the primary responsibility to provide for, and the responsibility to pay the costs of, the interim storage of such waste and spent fuel until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this Act." Therefore, it

ANSWER 3 (Cont'd)

is the position of the Department that utilities are responsible for storing spent fuel at reactor sites until an operating facility is available to accept the fuel.

QUESTIONS FROM SENATOR MCCLURE

QUESTION 4: What are you doing to get the MRS project moving forward? Shouldn't you proceed as if the MRS was on the original schedule -- and then ask Congress to certify what you are doing?

Are you integrating the recommendations of the MRS Review Commission into the waste management program?

On page 5 of your statement, you indicate that the DOE will "initiate interactions with cognizant parties to identify options for early acceptance of spent fuel." What kinds of interactions and when?

ANSWER 4: The schedule linkages contained in the Nuclear Waste Policy Amendments Act prohibit the selection of a Monitored Retrievable Storage (MRS) site by the Department until the repository site is recommended to the President. The Department, however, would prefer that the MRS be sited using the second method authorized by the Amendments Act, that of an agreement with a volunteer host.

The Department is currently examining its strategy for the MRS and is doing so in light of the MRS Review Commission's recommendations. As you are aware, the Department and the Commission generally agreed on the advantages for a facility that would provide storage before permanent geologic disposal but differed on the storage capacity required and the appropriate funding mechanism.

ANSWER 4 (Cont'd)

The Department has been working closely with the White House in connection with nomination of the Nuclear Waste Negotiator. Nomination of the Negotiator is expected in the near future, and, once confirmed by the Senate, the Department will support the Negotiator's interactions with cognizant parties. The Department believes that the Negotiator offers the best path for siting the MRS and, thus, early acceptance of spent fuel, and urges speedy confirmation by the Senate.

## QUESTIONS FROM SENATOR McCLURE

| | |
|---|---|
| QUESTION 5: | **What activities relating to the development of an OCRWM transportation system are currently being carried out? What are your priorities in this area?** |
| ANSWER 5: | The Office of Civilian Radioactive Waste Management (OCRWM) transportation system is being developed with emphasis on four major areas. These four areas include, cask system development, operational planning and support systems, economic and system studies, and institutional interactions. Continuing efforts are underway, and the priorities are discussed below. |

Overall, OCRWM's main transportation priority is in designing and developing "from-reactor" casks for shipping to either a Monitored Retrievable Storage (MRS) or a repository. In 1988, five contracts were awarded to develop two legal-weight truck cask designs and three rail/barge cask designs. In January 1990, DOE redirected this effort by continuing to fully fund one legal-weight truck cask design and one rail/barge cask design. Two other contracts will continue to concentrate on innovative features of their designs at a limited funding level. The remaining contract was discontinued. New issues and options related to 1998 MRS facility deployment are being studied and will be integrated into the transportation program strategy.

In the operational area, DOE is reviewing management options and evaluating procedural requirements for a 1998 MRS deployment. Operational planning will

**ANSWER 5 (Cont'd)**

continue as will the monitoring of industry and DOE shipments.

In economic and systems analysis, a major study is underway to determine the capabilities of reactor site near-by transportation infrastructure. Detailed data are also being collected to support MRS and repository activities related to transportation cost, risk, operational safety, and environmental impacts.

The OCRWM transportation program coordinates the resolution of both institutional and technical issues with numerous organizations. In conjunction with other agency interactions, the OCRWM transportation program has several cooperative agreements with national, regional and technical groups to help resolve issues and assist in transportation planning. This year, DOE is developing and plans to publish a draft strategy for implementing the section 180(c) training-assistance requirements of the Nuclear Waste Policy Amendments Act of 1987 for both routine transportation and emergency response.

## QUESTIONS FROM SENATOR McCLURE

QUESTION 6. What, if any contingency plans are being drawn up should Yucca Mountain be disqualified as the site for the repository?

ANSWER 6: If Yucca Mountain is found to be unsuitable, DOE is required to make recommendations to Congress within 6 months.

It is not possible to identify now what those recommendations might be. However, to minimize program delays should the Yucca Mountain site prove unsuitable, the Department is working closely with the White House on the appointment of a Nuclear Waste Negotiator. The Negotiator will seek to negotiate with a State or Indian Tribe willing to host a repository or a Monitored Retrievable Storage facility.

QUESTIONS FROM SENATOR McCLURE

QUESTION 7: As you stated in your testimony, management and organizational restructuring will be required for the program. You stated that you have established "direct-line reporting" of the DOE Yucca Mountain Project Office to the OCRWM.

Could you please tell me who DOE Yucca Mountain Project reports to at OCRWM, and if it is not the OCRWM Director, why not?

ANSWER 7: The Yucca Mountain Project Manager reports directly to the Office of Civilian Radioactive Waste Management (OCRWM) Associate Director for Facilities Siting and Development. This person, who reports to the Director, is OCRWM's senior technical official with line management responsibility for the entire geologic repository program which includes, among other activities, the scientific investigations at Yucca Mountain. This allows the OCRWM Director to concentrate program resources on geologic repository program objectives and management, while having a single senior manager fully accountable for and able to focus exclusively on day-to-day direction of the Yucca Mountain Project.

QUESTIONS FROM SENATOR McCLURE

| | |
|---|---|
| QUESTION 8: | Could you please describe the major recommendations of the Booz, Allen & Hamilton management review? Can you provide the Committee with a copy of their review? |
| ANSWER 8: | Booz-Allen & Hamilton, at the Secretary's direction, conducted an independent assessment of the Office of Civilian Radioactive Waste Management's (OCRWM) management structure and processes, systems, contractual arrangements, and organizational locations of DOE and contractor management entities and their authorities, responsibilities and accountabilities.<br>Booz-Allen & Hamilton made a number of recommendations in its report. Among the major recommendations were: (1) management structure improvements are needed to restore OCRWM program credibility and to effectively execute the priorities of the next several years; (2) two new project organizations should be established--an Office of Site Characterization and Assessment and an Office of MRS Development and Transportation; (3) the establishment of a division-level manager for project integration in Nevada would provide |

ANSWER 8 (Cont'd)

forward-looking focus on the contractor integration problem; (4) Quality Assurance should eventually become a single overall responsibility in OCRWM; (5) high priority should be given to completion and baselining of system requirements documents and realistic program schedules.

The Department generally agrees with these recommendations and is factoring them and other considerations into organizational decisions for the program.

As requested, the Booz-Allen & Hamilton review is attached. Although the document is marked draft, it represents Booz-Allen & Hamilton's final recommendations on organization structure.

DRAFT

# UNITED STATES DEPARTMENT OF ENERGY

## Review Of The
## Office Of Civilian Radioactive Waste Management

November 20, 1989

BOOZ · ALLEN & HAMILTON INC.
4330 East-West Highway
Bethesda, Maryland 20814-4455

## I. OVERVIEW OF THE EVALUATION

1. The DOE is at a strategic crossroad in its CRWM Program. Major institutional and technical barriers face the program, while existing strategies, management structure, budgets, and schedules have lost credibility with some CRWM constituencies.

   - DOE, NRC, and EPA are all breaking new ground in the licensing and permitting processes for a geologic repository
   - Site Characterization is a critical path activity for determining a suitable site, and Nevada is blocking important long-lead-time elements of the process
   - Substantial resources and technical capabilities are committed to the program, yet meeting requirements for successful licensing under the current strategy may be impossible with available geoscience study techniques
   - Important program management baselines have not been completed, management interaction is strained, and the program has been without a permanent director for two years

   Decisive action will be needed to set the program on a credible, success-oriented track toward timely acceptance and management of civilian radioactive waste.

2. Our findings and recommendations address organization structure, process, and resource/contractual issues -- in brief:

  - Organization realignment is needed to place YMPO in a line relationship with the OCRWM director and to establish accountability for the site characterization project
  - The functional matrix structure of HQ organization is not working effectively, as responsibilities for program accomplishments overlap and accountability is not established
  - To meet program goals, MRS siting/development and Transportation need clarified organizational focus and higher priority attention
  - Resources and positions will need to be reallocated to accommodate the new organization and priorities
  - Integration of contracted resources needs to be improved throughout the program

This report recommends a merging and restructuring of YMPO and some HQ organization elements to create two project offices at the AD level -- A Site Characterization Project Office and an MRS/ Transportation Project Office. Remaining matrix functions, process changes, and resource effects are also addressed.

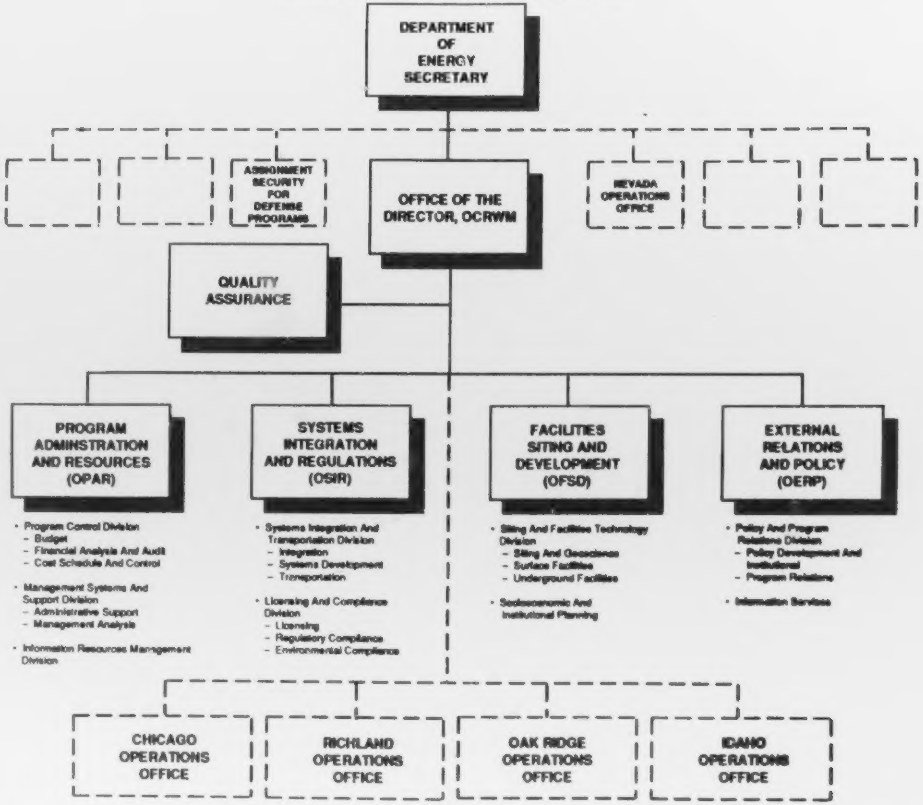
## II. CURRENT SITUATION

1. Since the 1987 Amendments Act, OCRWM attention has been focused on development of a site characterization and performance assessment strategy for Yucca Mountain, and on establishing viable NRC licensing and environmental compliance programs should the site be found suitable. Major program obstacles have materialized in the last two years:

    - The M&O contract has not been implemented, and most likely cannot be established in the near future
    - Through legislation and delayed permitting, Nevada is blocking conduct of surface-disturbing tests needed for site characterization
    - Several high-visibility technical issues have been raised (tectonics, volcanism, ground water level variation, etc.) that complicate the characterization
    - Doubts have arisen that existing performance assessment methodologies can satisfy NRC licensing requirements

Meeting program targets for 1998 acceptance of nuclear waste would call (at the least) call for immediate progress in clearing these obstacles. Since that does not appear possible, existing schedules and work plans are not a credible basis for organizational design and accountability.

OCRWM HEADQUARTERS STRUCTURE


DEPARTMENT OF ENERGY SECRETARY
ASSIGNMENT SECURITY FOR DEFENSE PROGRAMS
OFFICE OF THE DIRECTOR, OCRWM
NEVADA OPERATIONS OFFICE
QUALITY ASSURANCE
PROGRAM ADMINSTRATION AND RESOURCES (OPAR)
• Program Control Division
– Budget
– Financial Analysis And Audit
– Cost Schedule And Control
• Management Systems And Support Division
– Administrative Support
– Management Analysis
• Information Resources Management Division
SYSTEMS INTEGRATION AND REGULATIONS (OSIR)
• Systems Integration And Transportation Division
– Integration
– Systems Development
– Transportation
• Licensing And Compliance Division
– Licensing
– Regulatory Compliance
– Environmental Compliance
FACILITIES SITING AND DEVELOPMENT (OFSD)
• Siting And Facilities Technology Division
– Siting And Geoscience
– Surface Facilities
– Underground Facilities
• Socioeconomic And Institutional Planning
EXTERNAL RELATIONS AND POLICY (OERP)
• Policy And Program Relations Division
– Policy Development And Institutional
– Program Relations
• Information Services
CHICAGO OPERATIONS OFFICE
RICHLAND OPERATIONS OFFICE
OAK RIDGE OPERATIONS OFFICE
IDAHO OPERATIONS OFFICE

2. OCRWM headquarters organization (facing page) is a functional matrix form that evolved from an earlier project structure. The organization was established in anticipation of an M&O contract and designed to focus on cross-cutting technical and institutional issues.

- Federal FY90 ceilings for HQ total 163, and nearly 250 FTE support the organization. Most of the latter are with Weston (177) and three other contractors

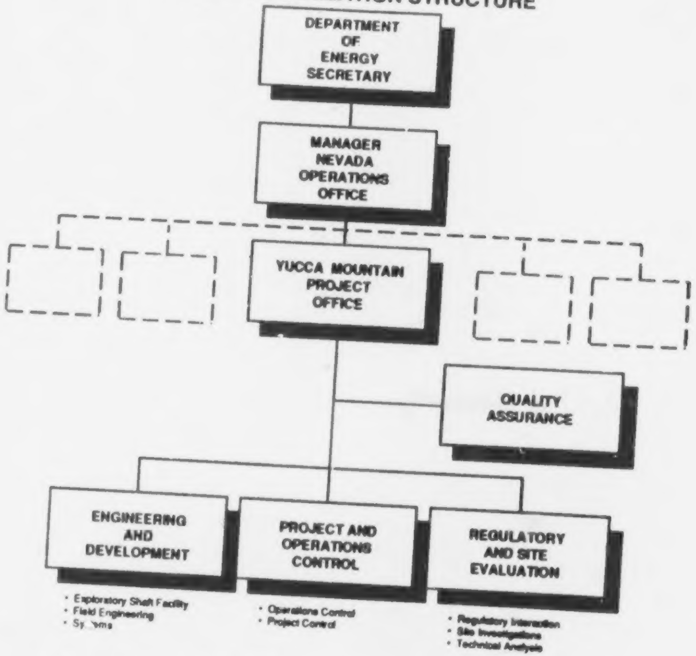
- Supporting programs are also managed at several operations offices:

| | FEDERAL | CONTRACTOR |
|---|---|---|
| Chicago | 12 | 200 |
| Richland | 3 | 162 |
| Idaho | 10 | 104 |
| Oak Ridge | 1 | 34 |

- No permanent director has been established, and a number of senior position are vacant

- OCRWM headquarters staff is located entirely in the D.C. area, when not on detail to other projects

## YMPO ORGANIZATION STRUCTURE


DEPARTMENT OF ENERGY SECRETARY
MANAGER NEVADA OPERATIONS OFFICE
YUCCA MOUNTAIN PROJECT OFFICE
QUALITY ASSURANCE
ENGINEERING AND DEVELOPMENT
PROJECT AND OPERATIONS CONTROL
REGULATORY AND SITE EVALUATION
• Exploratory Shaft Facility
• Field Engineering
• Systems
• Operations Control
• Project Control
• Regulatory Interaction
• Site Investigations
• Technical Analysis

| | ENGINEERING AND DEVELOPMENT | PROJECT AND OPERATIONS CONTROL | REGULATORY AND SITE EVALUATION |
|---|---|---|---|
| Science Applications International Corp (SAIL) | x | x | x |
| Reynolds Electrical And Engineering Company (ReeCo) | x | x | x |
| Holmes And Naiver (H&N) | x | x | x |
| Fenix And Scission Of Nevada (F&N) | x | x | x |
| Sandia National Laboratory (SNL) | x | x | x |
| Los Alamos National Laboratory (LANL) | x | x | x |
| Lawrence Livermore National Laboratory (LLNL) | x | x | x |
| U.S. Geological Survey (USGS) | x | x | x |
| MACTEC | | x | |

3. The Yucca Mountain Project Office (YMPO) began as one of several site characterization offices prior to the 1987 Amendments Act, which narrowed characterization activities to one site. YMPO has reported to the Nevada Operations Office until now. (diagram facing)

   - In addition to scientific and technical support from several national labs, YMPO is supported by the same cadre of contractors that for many years have worked at the Nevada Test Site (NTS). Integration and support are provided also through direct contracts with SAIC and MACTECH

   - YMPO is staffed with 65 Federal FTE and nearly 1400 FTE from labs and contractors. Multiple contractor support appears matrixed across most of the organization

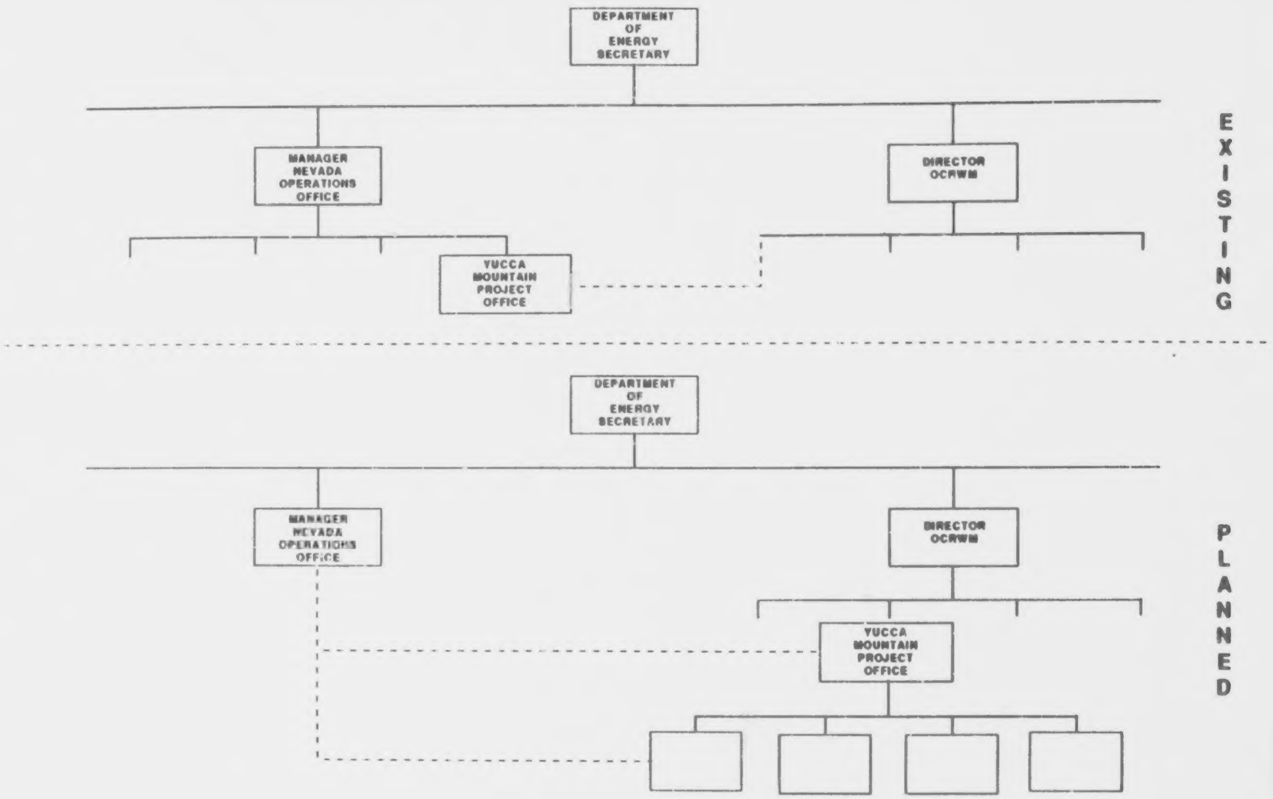
   - YMPO and HQ do not appear to overlap each other in use of contractor or lab support

   - Substantial management support (administrative, contracts, legal, etc.) is provided to the project by the Nevada Operations Office

## 4. Major program management challenges continue to face YMPO.

- Quality Assurance programs have taken shape with project participants but are not fully implemented in HQ and YMPO organizations. Backtracking and redevelopment of basic data and records may be needed to meet QA requirements
- Requirements document heirarchies and baselines are not yet established to the point where configuration management/change control processes can help to define accountability and responsibilities
- The program is under intense local political pressure and close scrutiny from congress, the utility industry, various review boards and oversight groups, and wary regional interest groups

## EXISTING AND PLANNED YMPO REPORTING RELATIONSHIPS



DEPARTMENT OF ENERGY SECRETARY
MANAGER NEVADA OPERATIONS OFFICE
DIRECTOR OCRWM
YUCCA MOUNTAIN PROJECT OFFICE
EXISTING
DEPARTMENT OF ENERGY SECRETARY
MANAGER NEVADA OPERATIONS OFFICE
DIRECTOR OCRWM
YUCCA MOUNTAIN PROJECT OFFICE
PLANNED

5. Actions have been initiated to establish YMPO in a line reporting relationship to the director of OCRWM.

    - The action would implement a part of the DOE Secretary's "new course" by establishing stronger lines of direction and accountability for high priority projects
    - YMPO would retain coordination relationships with the Nevada Operations Office (NVOO) and continue to receive management support from NVOO
    - Specific mechanisms for any new YMPO interaction with HQ have not been established
    - No changes in OCRWM structure have been made to accommodate the new YMPO relationship

Without further definition, the realignment of YMPO would have little effect or advantage over the old structure.

## III. MANAGEMENT OUTLOOK

1. A realistic management outlook -- given the technical and institutional tradeoffs that face the program -- should consider the probability of some change in the "linkage" between the MRS facility and the permanent repository. This would directly affect the choice of appropriate management structure for the next phase of the program:

   - Characterization of the Yucca Mountain site would continue to require strong technical and regional focus
   - MRS siting would be added to the critical path for program planning
   - MRS development would need higher level organizational focus
   - Transportation would also need higher profile activity as very difficult institutional challenges remain

These perspectives alone -- notwithstanding other good reasons -- provide strong motivation to reorient the organization along project lines.

## IV. FINDINGS AND OBSERVATIONS

1. The CRWM program that exists today took shape through many incremental decisions and compromises, each responding as effectively as possible to events or external pressures, but the resulting structure and resources are not optimal for the next stage of the program.

    - HQ and early field organizations reflected the diverse character of a widespread national program of concept development, site evaluation, and interaction with regional interests and institutions

    - Momentum was established for a three-site characterization program before the 1987 Amendments Act

        - HQ built capability for a challenging site coordination program
        - M&O (SEDM) procurement moved forward
        - Three site offices built teams from existing or new contractor/lab resources

    - After the Amendments Act and the breakdown of the M&O procurement, momentum and uncertainty carried the program into the large, multi-organization structure now found

        - YMPO continued to employ contractors/labs that had supported NTS
        - Many contractor/labs that had supported other sites still have links to OCRWM HQ
        - HQ staff continued to build and was formed into a complex matrix

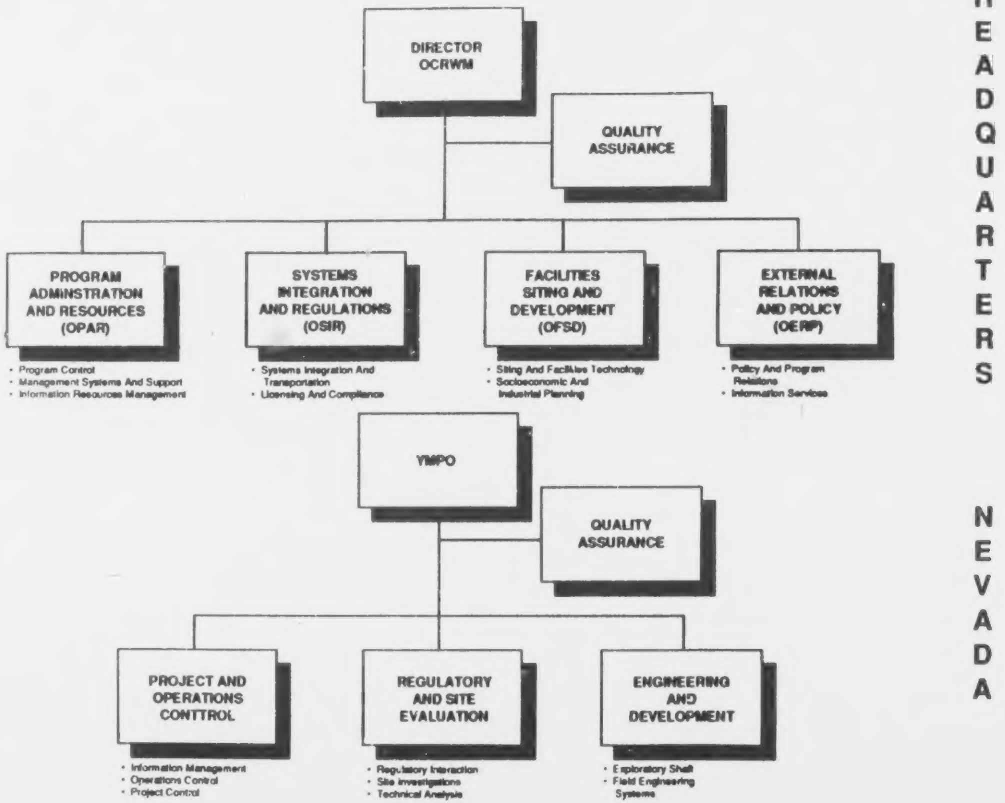
    The program has become unwieldy and slow to achieve important milestones, and has not been effective in dealing with external obstacles.

2. OCRWM HQ managers outnumber YMPO and day-to-day Headquarters management interaction goes far beyond classic "HQ policy/ programmatic guidance" roles.

    - HQ's matrix organization has combined with the lack of firm baselines and requirements documentation to strain HQ-field communications
        - Well-intended initiatives by HQ result in direction that often overlaps other matrix areas or goes too deep into the "implementation" role of the field project
        - YMPO does not always have the requirements definitions or information available to sort and interpret the "directives"
    - Multiple organizations in HQ compete for the attention and priorities of key YMPO organizations
        - The YMPO Regulatory and Site Evaluation Division manager receives "direction" from six entities in HQ, in addition to other information/coordination requests (facing)
        - The YMPO Project and Operations Control Division has many functions and must respond and coordinate numerous internal and external entities

YMPO managers do not feel they are **"on the management team"**, nor fully accountable for site characterization project results -- **a serious problem in light of the unclear HQ (matrix) accountability for program success.**

## CURRENT OCRWM ORGANIZATION


HEADQUARTERS
DIRECTOR OCRWM
QUALITY ASSURANCE
PROGRAM ADMINSTRATION AND RESOURCES (OPAR)
• Program Control
• Management Systems And Support
• Information Resources Management
SYSTEMS INTEGRATION AND REGULATIONS (OSIR)
• Systems Integration And Transportation
• Licensing And Compliance
FACILITIES SITING AND DEVELOPMENT (OFSD)
• Siting And Facilities Technology
• Socioeconomic And Industrial Planning
EXTERNAL RELATIONS AND POLICY (OERP)
• Policy And Program Relations
• Information Services
NEVADA
YMPO
QUALITY ASSURANCE
PROJECT AND OPERATIONS CONTTROL
• Information Management
• Operations Control
• Project Control
REGULATORY AND SITE EVALUATION
• Regulatory Interaction
• Site Investigations
• Technical Analysis
ENGINEERING AND DEVELOPMENT
• Exploratory Shaft
• Field Engineering Systems
]

## 3. OCRWM HQ and YMPO have very different internal structures and resource arrangements

- The functional HQ organization is characterized by extensive interaction between its four major offices, with the principal support contractor the common denominator
    - There has been no permanent director for two years
    - Second and third level managers compete for initiative and control
    - Weston is the primary resource for nearly all elements of the organization
- YMPO has a centralized management style with many loosely integrated contractors matrixed across the project
    - The PM has delegated responsibility to second level division managers with relatively little overlap
    - Division managers appear to operate independently
    - SAIC has the largest support role across the board, but most of the seven other major contractors/labs provide support across the organization too

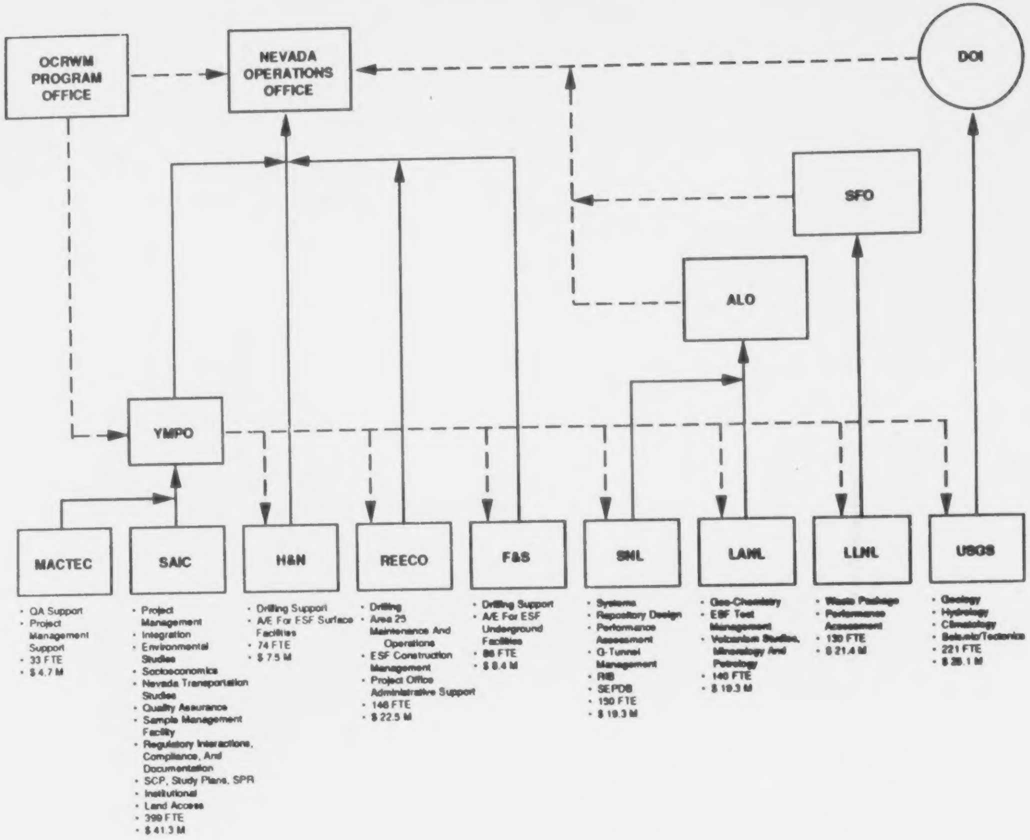
Both organizations could benefit from improved internal lines of responsibility and accountability.

4. YMPO management focus falls strongly on its three division-level managers

   - The PM is a strong leader whose management priorities tend to be externally focused
   - The DPM focuses on project administration demands and on high-priority "drills" and subprojects
   - The three division managers appear to function as individuals on separated "turf"
   - The contractors have mixed agendas (other projects, long-term relationships, competitive issues) and do not seem to function as part of the YMPO decision-making team

   As a consequence, YMPO division managers are the critical links for interactions both up and down in the organization. Finding time and perspective to focus on issues beyond the near-term is difficult, and frustration levels are high.

OCRWM – NVO/YMP Relationships


OCRWM PROGRAM OFFICE
NEVADA OPERATIONS OFFICE
DOI
SFO
ALO
YMPO
MACTEC
• QA Support
• Project Management Support
• 33 FTE
• $ 4.7 M
SAIC
• Project Management
• Integration
• Environmental Studies
• Socioeconomics
• Nevada Transportation Studies
• Quality Assurance
• Sample Management Facility
• Regulatory Interactions, Compliance, And Documentation
• SCP, Study Plans, SPR
• Institutional
• Land Access
• 399 FTE
• $ 41.3 M
H&N
• Drilling Support
• A/E For ESF Surface Facilities
• 74 FTE
• $ 7.5 M
REECO
• Drilling
• Area 25 Maintenance And Operations
• ESF Construction Management
• Project Office Administrative Support
• 146 FTE
• $ 22.5 M
F&S
• Drilling Support
• A/E For ESF Underground Facilities
• 86 FTE
• $ 8.4 M
SNL
• Systems
• Repository Design
• Performance Assessment
• G-Tunnel Management
• RIB
• SEPDB
• 150 FTE
• $ 19.3 M
LANL
• Geo-Chemistry
• ESF Test Management
• Volcanism Studies, Mineralogy And Petrology
• 140 FTE
• $ 19.3 M
LLNL
• Waste Package
• Performance Assessment
• 130 FTE
• $ 21.4 M
USGS
• Geology
• Hydrology
• Climatology
• Seismic/Tectonics
• 221 FTE
• $ 28.1 M

Graphic Source: L. Barrett

5. YMPO contractors and labs are task-driven, loosely integrated, and do not play important management roles in the program

    - Most of the nine major players (facing) were inherited by YMPO through prior support of the Nevada Test Site

    - Overlapping capability resulted from efforts to ensure that the best scientific resources were applied

    - Addition of a contractor with a combined technical support/integrator role may have excerbated turf problems

    - Contractors/labs have apparently asserted independent leverage on YMPO through the circuitous contractual linkages they have with DOE, and through regional political interests
        - YMPO manages MACTEC and SAIC directly
        - H&N, FNS, REECO are primarily NVOO contractors for the NTS
        - The national labs work for ALO and SFO, with memos-of-understanding governing their YMPO work
        - The USGS works for the project through an interagency agreement between DOE and DOI

While DOE projects have successfully managed one or more indirect contractual links many times, the complex linkages in this project work against management and integration efforts.

6. There is considerable debate in OCRWM HQ and YMPO on the boundaries between "HQ policy, programmatic guidance and oversight", and "YMPO accountability for project implementation"

- Concern arises in part from the perception that HQ applies much greater management resource (positions) to oversight, than YMPO can apply to implementation
    - YMPO tends to see the project as the primary activity in the program, while HQ manages other parts of the program as well
    - The cross-cutting structure of HQ and relatively low priorities on non-Yucca Mountain activities have focused HQ attention on YMPO
- The strongest (and most divisive) internal debate on control and responsibility surrounds the management of licensing and regulatory compliance -- not coincidentally an area with many important strategic questions remaining open
    - HQ has assertive managers in these areas
    - Organization charters carry responsibilities of HQ far into implementation activities
    - SAR and PA strategy uncertainties* allow wide latitude for HQ directives and action requests

Implementing organizational changes to reduce interface problems will not succeed unless resource adjustments, role definitions, and assignment of specific managers are all coordinated in the process.

---

*and out-of-date PMS manual and WBS dictionary

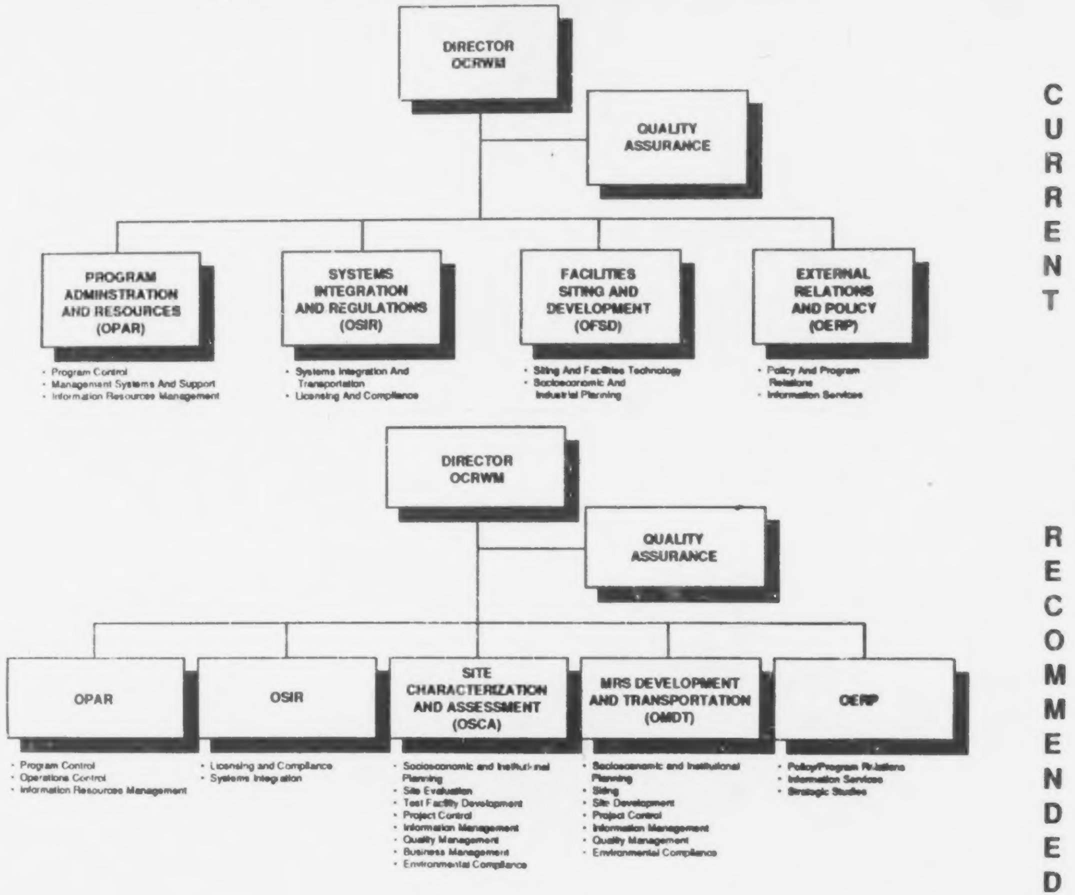
## V. RECOMMENDATIONS

1. Management structure improvements are needed to restore OCRWM program credibility and to effectively execute the priorities of the next several years. Further evolution will probably be appropriate later

- Organization structure
    - Establish OCRWM-YMPO line relationship
    - Create a new AD level project for repository site characterization and assessment
    - Add MRS/Transportation project at the AD level
    - Improve OSIR interface/functional definitions
    - Add management focus on project integration and business management in the field
    - Establish direct QA accountabilities
- Resources/contractual relationships
    - Shift federal staffing toward project elements
    - Provide for added second-level position at YMPO
    - Staff for more third-level delegation at YMPO
    - Program to consolidate contractor roles
- Process/geography

- High priority on baselining top-level program documents and balanced CCB process
- Positioning of active YMPO/HQ staff at both locations

CURRENT AND RECOMMENDED OCRWM ORGANIZATION


CURRENT
DIRECTOR OCRWM
QUALITY ASSURANCE
PROGRAM ADMINSTRATION AND RESOURCES (OPAR)
· Program Control
· Management Systems And Support
· Information Resources Management
SYSTEMS INTEGRATION AND REGULATIONS (OSIR)
· Systems Integration And Transportation
· Licensing And Compliance
FACILITIES SITING AND DEVELOPMENT (OFSD)
· Siting And Facilities Technology
· Socioeconomic And Industrial Planning
EXTERNAL RELATIONS AND POLICY (OERP)
· Policy And Program Relations
· Information Services
RECOMMENDED
DIRECTOR OCRWM
QUALITY ASSURANCE
OPAR
· Program Control
· Operations Control
· Information Resources Management
OSIR
· Licensing and Compliance
· Systems Integration
SITE CHARACTERIZATION AND ASSESSMENT (OSCA)
· Socioeconomic and Institutional Planning
· Site Evaluation
· Test Facility Development
· Project Control
· Information Management
· Quality Management
· Business Management
· Environmental Compliance
MRS DEVELOPMENT AND TRANSPORTATION (OMDT)
· Socioeconomic and Institutional Planning
· Siting
· Site Development
· Project Control
· Information Management
· Quality Management
· Environmental Compliance
OERP
· Policy/Program Relations
· Information Services
· Strategic Studies

2. The recommended OCRWM organization (facing) establishes two new project organizations -- an Office of Site Characterization and Assessment (OSCA), and an Office of MRS Development and Transportation (OMDT). The two project offices incorporate all related field activities, including YMPO

   - The two projects would be created from the merger of YMPO and the Office of Facilities Siting and Development, plus selected branch-level functions from the other HQ Offices
   - It is likely that the appropriate location for the top management of the Site Characterization and Assessment Office would be at the site, but that some functions would be staffed in Washington
   - The MRS Development and Transportation Office would likely be organized in Washington, with staffing in the field as siting activity dictates

   The new design essentially moves YMPO (and an MRS/Transportation project) into AD-level positions -- to interact with the AD-level matrixed HQ functions that remain.

## SUMMARY OF RECOMMENDED FUNCTION AND RESOURCE CHANGES

### OFFICE OF FACILITIES AND DEVELOPMENT

- Siting and Facilities Technology Division:
  - Resources and functions divided between OMDT and OSCA projects.
- Socioeconomic and Institutional Planning Division:
  - Resources and functions divided between OMDT and OSCA projects.

### OFFICE OF SYSTEMS INTEGRATION AND REGULATIONS

- Systems Integration and Transportation Division:
  - Transportation branch functions and resources shift to OMDT project, others essentially unchanged.
- Licensing and Compliance Division:
  - Licensing branch functions edited to reduce implementation role
  - Regulations branch functions edited to reduce implementation role
  - Environmental branch essentially unchanged
  - Some resources would shift to OSCA, OMDT.

### YUCCA MOUNTAIN PROJECT OFFICE

- Merges with OFSD elements to become OSCA
- Adds divisions for socioeconomic/institutional planning and project integration
- Creates Business Management Branch to replace Operations Control Branch in Project/Operations Control Division.

3. Improvement of the project interface with the HQ Licensing and Regulatory Compliance functions will result from elevation of the project management level and by a thorough revision of the organizational charters to place all implementing functions in the project offices

   - Office, division, and branch management will have to "sign up" to the new definitions
   - OCRWM director will need to approve and enforce the changed responsibilities
   - Shifts in definitions and responsibilities will have to be accompanied by adjustments of positions and budgets
   - Recommended shifts in OSIR, OFSD, and YMPO functions are summarized on the facing page

4. Establishment of a division-level manager for project integration in Nevada would provide forward-looking focus on the contractor integration problem

    - Immediate changes in the contractor cadre are a difficult practicality
    - A senior manager could authorize and legitimize routine actions and decisions by the "integrator" contractor
    - The project needs a long-term program to position the right resources for 1995 and beyond

    The new organization element could evaluate integration needs and technical redundancies over a longer period, and put a streamlining program in motion.

5. A business management branch function could improve the YMPO/OSCA project office capabilities to manage the many contract relationships in the program

    - The branch would interface and coordinate the many matrixed support services provided by NVOO
    - The branch could oversee and monitor the overall resource requirements and commitments of the project's managers

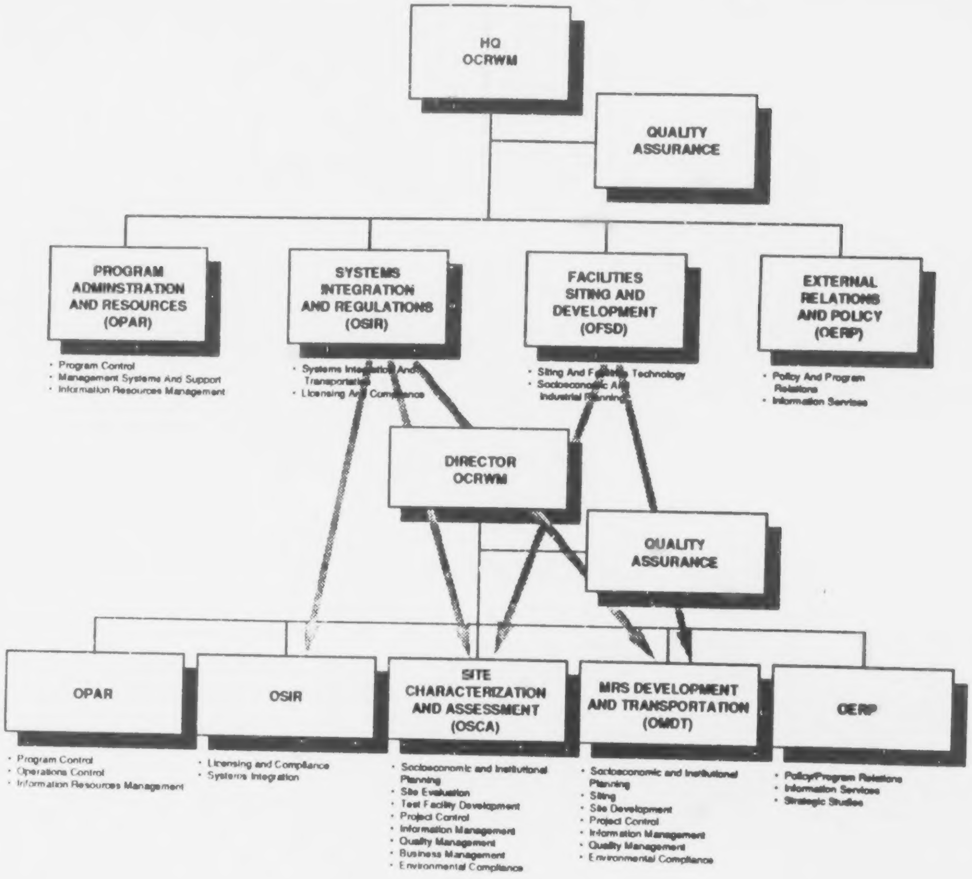
## 6. Quality Assurance should eventually become a single overall responsibility in OCRWM

- Separate QA organizations for the project offices (OSCA, OMDT) seem appropriate until the QA programs are fully implemented and baselines established
  - The QA offices would continue to report to the project office managers and operate under the oversight of the OCRWM QA office
  - Project QA offices would gradually shift empahsis to QA assessment
  - Project QA managers and staff would eventually report directly to OCRWM HQ QA Director

## 7. High priority should be given to completion and baselining of system requirements documents and realistic program schedules

- An established document heirarchy will resolve many functional interfaces that are difficult to manage now
- An established configuration management program and functioning change control boards would provide the forum for more effective decision-making

## CURRENT AND RECOMMENDED OCRWM ORGANIZTION


HQ OCRWM
QUALITY ASSURANCE
PROGRAM ADMINSTRATION AND RESOURCES (OPAR)
· Program Control
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· Information Resources Management
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8. The Office of Site Characterization and Assessment management and staff should be positioned in both Nevada and HQ

   - Managers should be "built into" the decision-making and day-to-day administrative process of both locations
   - Authority to act for the project office manager should always exist at both locations

9. Implementation of the management structure changes will require analysis and debate by key first and second-level managers in OCRWM and YMPO

   - Organization function descriptions need to be analyzed and revised in draft
   - Resources (positions and budget) impacts need to be estimated at least at the branch level
   - The OCRWM Director will have to "sign up" and assert the changes, and umpire the transitions

* * * *

# APPENDIX II

## Additional Material Submitted for the Record

**The Secretary of Energy**
Washington, DC 20585

April 9, 1990

OFFICIAL COMMITTEE FILE
PLEASE RETURN

APR 10 1990
WASHINGTON, D.C.

The Honorable J. Bennett Johnston
Chairman, Committee on Energy and
  Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On March 2, 1990, I appeared before your committee to discuss the Department of Energy (DOE) Civilian Radioactive Waste Program. During that hearing, you expressed some concern as to whether our ongoing litigation against the State of Nevada permanently would dispose of all the issues currently restraining our site characterization activities at Yucca Mountain.

The suit filed against Nevada seeks a court order declaring that the Yucca Mountain site has not been validly or effectively disapproved by the State; requiring the State to act on three specific DOE permit applications; and prohibiting the State from unlawfully interfering with site characterization activities.

If we are successful in our suit, and the court issues the order we are requesting, the State could no longer refuse to act on permit applications on the basis that it has disapproved the Yucca Mountain site. In addition, if the State violates the order prohibiting it from unlawfully interfering with site characterization activities, it could be held in contempt of court. We believe that persisting in its unjustified refusal to consider permits would constitute such a violation.

During the hearing I also offered to have the Department's General Counsel, Stephen A. Wakefield, meet with your staff to provide detailed information on our proposed reprogramming to make an initial payment on the Fernald settlement. That meeting was held, and your committee subsequently provided timely approval of our reprogramming request. On March 15, 1990, the Department made an initial payment of $16 million into the court-administered fund. I appreciate your committee's interest and support in this matter.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

cc: The Honorable James A. McClure
Ranking Minority Member

J. BENNETT JOHNSTON, LOUISIANA, CHAIRMAN

DALE BUMPERS, ARKANSAS
WENDELL H. FORD, KENTUCKY
HOWARD M. METZENBAUM, OHIO
BILL BRADLEY, NEW JERSEY
JEFF BINGAMAN, NEW MEXICO
TIMOTHY E. WIRTH, COLORADO
KENT CONRAD, NORTH DAKOTA
HOWELL T. HEFLIN, ALABAMA
JOHN D. ROCKEFELLER IV, WEST VIRGINIA

JAMES A. McCLURE, IDAHO
MARK O. HATFIELD, OREGON
PETE V. DOMENICI, NEW MEXICO
MALCOLM WALLOP, WYOMING
FRANK H. MURKOWSKI, ALASKA
DON NICKLES, OKLAHOMA
CONRAD BURNS, MONTANA
JAKE GARN, UTAH
MITCH McCONNELL, KENTUCKY

DARYL OWEN, STAFF DIRECTOR
D. MICHAEL HARVEY, CHIEF COUNSEL
FRANK M. CUSHING, STAFF DIRECTOR FOR THE MINORITY
GARY G. ELLSWORTH, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150

May 3, 1990

The Honorable James D. Watkins
Secretary
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Mr. Secretary:

On April 9, 1990, you sent the Committee a letter concerning the Department's pending litigation against the State of Nevada related to site characterization activities at Yucca Mountain. Specifically, your letter responded to my question at the Committee's March 2 hearing about whether the pending litigation would dispose of all issues related to access to the Yucca Mountain site. In your response, you stated that, if the Department is successful in its suit, "the State could no longer refuse to act on permit applications on the basis that it has disapproved the Yucca Mountain site."

I am extremely concerned that this lawsuit will not dispose of all issues. As I understand it, the basis for the Department's lawsuit was the refusal of the State of Nevada to act on three specific permit applications. Since there are at least eight additional state permits that will be required for site characterization, I am concerned that new issues will be raised with each new permit application that is submitted. If new litigation is required to obtain each and every required permit, the Department could find itself held up in court and barred from the site for many years.

As you are aware, the Committee is extremely concerned about the Department's ability to carry out its mandate under the Nuclear Waste Policy Act to conduct site characterization activities at Yucca Mountain. When Congress enacted the Nuclear Waste Policy Act, we never envisioned that years of protracted litigation would be required simply to gain access to the site for testing.

I am interested in learning how the Department intends to avoid protracted litigation on each and every permit application. For instance, does the Department feel that its pending lawsuit is sufficiently broad to resolve the major issues that could reasonably be expected to be raised by the State in review of future permit applications? Further, does the Department expect that the pending litigation will address or resolve the issue of federal preemption in the Nuclear Waste Policy Act of 1982, as amended, at least as it relates to federal authority to conduct site characterization activities at the Yucca Mountain site?

It would be very helpful if you could provide the Committee with a listing of the permits that will be required for site characterization, the specific activities that require the Department to obtain each permit, the statutes under which each permit is required, the requirements for each permit, and an estimate of the timing of application for each permit. Please include in this listing any other state permits that could be required during the course of site characterization and any federal permits or approvals required. Please also provide the Committee with an analysis of the specific issues that the Department would reasonably expect to be raised by each permit application.

I look forward to hearing from you concerning these issues. Please provide your answers to these questions to the Committee as quickly as possible to allow their inclusion in the printed record from the March 2, 1990 hearing.

Sincerely,

Bennett

J. Bennett Johnston
Chairman

JBJ/mlw

**The Secretary of Energy**
Washington, DC 20585

June 4, 1990

The Honorable J. Bennett Johnston
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510-6150

Dear Mr. Chairman:

On May 3, 1990, you wrote to express the Committee's concern about the Department's ability to carry out its mandate under the Nuclear Waste Policy Act in the face of potentially protracted litigation with the State of Nevada over permits needed to conduct site characterization activities at Yucca Mountain. In response to your request for information about the permits that will be required, I am enclosing a list that identifies both the State-issued permits and approvals and the Federal permits and approvals needed for site characterization and providing the information you requested regarding each permit. Applications for three of the permits were returned without State action being taken on December 26, 1989. Applications for the other eight permits cannot be filed until further design information is available.

Your letter also asked how the Department intends to avoid protracted litigation with the State over each of these permits. As you know, the State of Nevada instituted litigation in the U.S. Court of Appeals for the Ninth Circuit (Nevada v. Watkins) arguing primarily that Congress could not impose upon Nevada a nuclear waste repository site over the State's objection and, in any event, the State had effectively vetoed any attempt to select the Yucca Mountain site. Shortly thereafter litigation was instituted in federal district court in Nevada (U.S. v. Nevada) seeking to compel the State to act upon the rejected permit applications and to prohibit the State from unlawfully interfering with DOE's site characterization activities at Yucca Mountain. There are two recent development which underscore your concern that the State intends to delay site characterization.

First, in a hearing held on May 23, the State of Nevada persuaded the district court to stay proceedings in U.S. v. Nevada. As a result of this ruling, the district court will not move forward on our case until the Ninth Circuit decides Nevada v. Watkins. That Ninth Circuit case is scheduled to be argued in August, and we expect it will be decided by the court of appeals before the end of this year. The second development of which I must apprise you is that, in a brief that it recently filed in the Ninth Circuit court case, the State boasts, at page 26, that "it should be obvious that the State will likely exercise every power and every aspect of its inherent jurisdiction to frustrate the federal program." I am enclosing a copy of this rather astonishing document, which is more of a political statement than a legal brief, for your information.

Notwithstanding these developments, the legal issues raised by the State to obstruct site characterization essentially remain on track for resolution in the litigation process. As you will see from the brief that the State filed in the Ninth Circuit, that court has been presented with a laundry list of the reasons why the State asserts site characterization cannot go forward. In particular, the preemptive effect of the Nuclear Waste Policy Act of 1982, as amended, concerning site characterization activities is an issue that has been squarely placed before the court for decision. If by the end of the year the Ninth Circuit emphatically rejects the various arguments on which the State has staked its case -- as we expect it will -- the State should be left with no defense, however spurious, for its refusal to act on the permits that we need for site characterization activities.

If the Ninth Circuit rules in opposition to the position taken by Nevada, we would anticipate that the district court would remove its stay and rule upon our petition for injunctive relief. Although the petition is drafted broadly enough to permit a judicial order precluding undue delay in State action regarding future permit applications, it is difficult to predict the manner in which a federal judge would address State interference with applications not presently filed. The intention of Nevada to use every means to frustrate the federal program is now explicitly on record in its brief before the Ninth Circuit.

I appreciate and share your concern about the need to overcome the litigation roadblocks to this essential program so that we can get on with the task with which Congress has charged the Department and do the scientific investigation and analysis needed to determine whether Yucca Mountain would be a suitable site for a nuclear waste repository. Overcoming those roadblocks and getting on with the job entrusted to us by Congress will continue to be a top priority of mine.

Sincerely,

James D. Watkins
Admiral U.S. Navy (Retired)

Enclosures

cc: The Honorable James A. McClure
Ranking Minority Member

# ENVIRONMENTAL PERMITS & APPROVALS REQUIRED FOR SITE CHARACTERIZATION

## STATE-ISSUED PERMITS & APPROVALS

1. **UNDERGROUND INJECTION CONTROL (UIC) PERMIT FOR SURFACE-BASED TESTING**

**Authority**: Safe Drinking Water Act (SDWA), (P.L. 93-523; 42 USC 300[h] [Part C]; 40 CFR 124, 144-147, 149; Nevada Revised Statutes 445.131-445.354; Nevada Administrative Code 1-96.1)

**Applicable Activities**: Injection of tracers into test wells during surface-based testing.

**Requirements**: Application to Nevada Department of Environmental Protection (NDEP) must demonstrate that the injection will not endanger any source of drinking water. In addition, it must include information concerning the location of all injection wells; a report on the geology and hydrology of the area; plans and drawings for each well; the types, rates, and volumes of material to be injected; injection pressures; and a plan for plugging and abandoning the wells.

**Current Status**: Application for C-complex wells was filed with the NDEP on 04/06/89; additional information requested by NDEP on 06/27/89; application returned to DOE 12/26/89.

**Timeframe**: Minimum of 4 months, with 1-2 months added to respond to requests for additional information. If a public hearing is held, the total time for processing the permit application may exceed 12 months.

**Key Issues**: The pending litigation is expected to answer whether the State of Nevada is required to act on this permit application. DOE's application for the UIC permit for surface-based testing activities will be re-submitted at that time; however, the State may cause further delays by making repeated requests for additional information and/or denying the permit on insubstantial grounds.

2. **AIR REGISTRATION CERTIFICATE FOR LAND DISTURBANCE**

**Authority**: Clean Air Act, as amended (P.L. 95-95; 42 USC 7401-7642; 40 CFR 50-53, 48, 60-61, 81.300-81.400, and 124; Executive Order 12088; Nevada Revised Statutes 445.401, et seq.; Nevada Administrative Code 445.430-445.995)

**Applicable Activities**: Surface disturbances, including construction of roads and drill-pads during surface-based testing and exploratory shaft facility (ESF) site preparation.

**Requirements**: Application to NDEP must include adequate empirical data for the source of air contaminants, along with a plot plan of the facility or facilities, a U.S. Geological Survey (USGS) map showing the locations of facilities and/or areas of land disturbance, and any other information deemed necessary to make an independent air quality impact assessment.

**Current Status**: Application filed on 01/20/88; letter sent by DOE to NDEP on 07/11/89, requesting immediate action; application returned to DOE on 12/26/89.

**Timeframe**: Within 5 working days after receiving an application for an air registration certificate, NDEP must determine if any additional information is required to process the application. Within 15 days after receiving adequate information, NDEP must make a preliminary determination to issue or deny the certificate. After a 30-day public comment period, but within 75 days after receiving adequate information, the NDEP must then make a final decision to issue or deny the certificate.

**Key Issues**: The pending litigation is expected to answer whether the State of Nevada is required to act on this permit application. DOE's application for the air registration certificate for surface disturbances related to surface-based testing and ESF site preparation will be re-submitted at that time; however, the State may cause further delays by making repeated requests for additional information and/or denying the permit on insubstantial grounds.

### 3. GROUND-WATER APPROPRIATION PERMIT

**Authority**: Nevada Revised Statutes 533.325-533.540 and 534.010-534.190

**Applicable Activities**: Use of approximately 402 acre-feet of water from Well J-13 during surface-based testing and ESF site preparation activities; including, dust suppression, drilling, and trenching.

**Requirements**: Application to the Nevada State Engineer must include the following information: the source from which appropriation is to be made; amount of water to be appropriated; purpose for which the water will be used; description of the water source and proposed works; estimated cost of the works; the time required to construct the works; the time required to put the water to beneficial use; as well as any other information requested by the Nevada State Engineer (e.g., maps and drawings).

**Current Status**: Application filed on 07/21/88 and returned to DOE on 12/26/89. Water monitoring program currently being developed in consultation with the National Park Service (NPS) to address issues raised by its protest, filed 01/03/89.

**Timeframe**: Minimum of three months from application date; maximum of 15 months, unless the deadline is voluntarily extended by the applicant.

**Key Issues**: The pending litigation is expected to answer whether the State of Nevada is required to act on this permit application. DOE's application for a ground-water appropriation permit for surface-based testing and ESF site preparation activities will be re-submitted at that time; however, the State may cause further delays by making repeated requests for additional information and/or denying the permit on insubstantial grounds.

### 4. NPDES PERMIT

**Authority**: Clean Water Act (33 USC 1251 et seq.; 33 CFR 209, 320, 323-330; 40 CFR 110, 112, 116, 117, 121, 122-125, 129, 133, 136, 230, 401, and 403; Executive Order 11735; Executive Order 12088; Nevada Administrative Code 445.70-445.241)

**Applicable Activities**: Discharges to waters of the U.S., including sewage disposal, discharges from the mine wastewater pond; and other minor discharges (e.g., pump tests).

**Requirements**: Application to NDEP must include information concerning the type and volume of wastewater discharged to the surface (e.g., sanitary wastes, process wastes), where the wastes will be discharged (e.g., well, lagoon), the number of separate discharge points, and whether or not the discharge may contain certain substances.

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: Application must be submitted at least 180 days before discharge; public notice of application is required, along with a 30-day comment period and opportunity for a public hearing. If a public hearing is held, total time for processing the permit application may exceed 12 months.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

### 5. DRINKING WATER SYSTEM PERMIT

**Authority**: Safe Drinking Water Act of 1974 (SDWA), as amended (P.L. 93-523; 42 USC 300[f]-300[j][10]; 40 CFR 124, 141, 143; Executive Order 12088; Nevada Revised Statutes 445.361 et seq.; Nevada Administrative Code 445.244-445.420)

**Applicable Activities**: Construction and operation of drinking water supply system for the ESF work force.

**Requirements**: Application to the Nevada State Health Officer must demonstrate that the system will be in compliance with primary and secondary standards stipulated by the Nevada Administrative Code.

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: No fixed timeframe; normally, such permits are granted within two months of the filing date.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

### 6. SANITARY SEWAGE DISPOSAL PERMIT

**Authority**: Nevada Revised Statutes, 444.650; Nevada Administrative Code 445.179-445.182 and 445.750-445.840

**Applicable Activities**: Construction of sewage lagoon or septic tank system in support of ESF-related activities.

**Requirements**: Application to the Nevada Department of Conservation and Natural Resources requires complete engineering plans and specifications to ensure that the system design is in compliance with the Nevada Administrative Code. The design must be prepared by a licensed professional engineer.

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: No fixed timeframe; normally, such permits are granted within two months of the filing date.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

## 7. STATE WATER POLLUTION CONTROL PERMIT

**Authority**: Nevada Revised Statutes 445.131-445.354

**Applicable Activities**: Construction of surface impoundments (e.g sewage lagoons, mine wastewater ponds, and mud-and-cuttings pits) in support of ESF-related activities.

**Requirements**: Application to NDEP must include detailed plans of the surface impoundment(s), as well as a discussion of potential impacts on groundwater supplies and a description of the mitigative measures that will be taken to prevent any discharge from the impoundment(s).

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: This permit is issued in conjunction with the NPDES permit, described above. Application must be submitted at least 180 days before discharge; public notice of application is required, along with a 30-day comment period and opportunity for a public hearing. If a public hearing is held, total time for processing the permit application may exceed 12 months.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

## 8. UNDERGROUND INJECTION CONTROL (UIC) PERMIT FOR ESF CONSTRUCTION & OPERATION

**Authority**: Safe Drinking Water Act (P.L. 93-523; 42 USC 300[h] [Part C]; 40 CFR 124, 144-147, 149; Nevada Revised Statutes 445.131-445.354; Nevada Administrative Code 1-96.1)

**Applicable Activities**: Injection of tracers into test wells during construction and operation of the ESF.

**Requirements**: Application to NDEP must demonstrate that the injection will not endanger any source of drinking water. In addition, it must include information concerning the location of all injection wells; a report on the geology and hydrology of the area; plans and drawings for each well; the types, rates, and volumes of material to be injected; injection pressures; and a plan for plugging and abandoning the wells.

**Current Status**: Awaiting information concerning the types of tracers and method of injection to be used.

**Timeframe**: Minimum of 4 months, with 1-2 additional months added to respond to requests for additional information. If a public hearing is held, total time for processing the permit application may exceed 12 months.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

## 9. AIR REGISTRATION CERTIFICATE/OPERATING PERMIT FOR ESF VENTS

**Authority**: Clean Air Act, as amended (P.L. 95-95; 42 USC 7401-7642; 40 CFR 50-53, 48, 60-61, 81.300-81.400, and 124; Executive Order 12088; Nevada Revised Statutes 445.401, et seq.; Nevada Administrative Code 445.430-445.995)

**Applicable Activities**: Construction and operation of the ESF.

**Requirements**: Application to NDEP must include adequate empirical data for the source of air contaminants, a plot plan of the facility or facilities, a U.S. Geological Survey (USGS) map showing the locations of facilities and/or areas of land disturbance, and any other information deemed necessary to make an independent air quality impact assessment, as well as an environmental evaluation.

**Current Status**: Awaiting emissions data for shaft vents.

**Timeframe**: Within 5 working days after receiving an application for an air registration certificate/operating permit, NDEP must determine if any additional information is required to process the application. Within 15 days after receiving adequate information, NDEP must make a preliminary determination to issue or deny the certificate/permit. After a 30-day public comment period, but within 75 days after receiving adequate information, the NDEP must then make a final decision to issue or deny the certificate/permit.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

## 10. AIR REGISTRATION CERTIFICATE/OPERATING PERMIT FOR THE CONCRETE BATCH PLANT

**Authority**: Clean Air Act, as amended (P.L. 95-95; 42 USC 7401-7642; 40 CFR 50-53, 48, 60-61, 81.300-81.400, and 124; Executive Order 12088; Nevada Revised Statutes 445.401, et seq.; Nevada Administrative Code 445.430-445.995)

**Applicable Activities**: Construction and operation of the concrete batch plant.

**Requirements**: Application to NDEP must include adequate empirical data for the source of air contaminants, a plot plan of the facility or facilities, a U.S. Geological Survey (USGS) map showing the locations of facilities and/or areas of land disturbance, and any other information deemed necessary to make an independent air quality impact assessment, as well as an environmental evaluation.

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: Within 5 working days after receiving an application for an air registration certificate/operating permit, NDEP must determine if any additional information is required to process the application. Within 15 days after receiving adequate information, NDEP must make a preliminary determination to issue or deny the certificate/permit. After a 30-day public comment period, but within 75 days after receiving adequate information, the NDEP must then make a final decision to issue or deny the certificate/permit.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

### 11. AIR REGISTRATION CERTIFICATE/OPERATING PERMIT FOR THE GRAVEL SCREENING PLANT

**Authority**: Clean Air Act, as amended (P.L. 95-95; 42 USC 7401-7642; 40 CFR 50-53, 48, 60-61, 81.300-81.400, and 124; Executive Order 12088; Nevada Revised Statutes 445.401, et seq.; Nevada Administrative Code 445.430-445.995)

**Applicable Activities**: Construction of the gravel screening plant.

**Requirements**: Application to NDEP must include adequate empirical data for the source of air contaminants, a plot plan of the facility or facilities, a U.S. Geological Survey (USGS) map showing the locations of facilities and/or areas of land disturbance, and any other information deemed necessary to make an independent air quality impact assessment, as well as an environmental evaluation.

**Current Status**: Awaiting design information necessary to prepare the permit application.

**Timeframe**: Within 5 working days after receiving an application for an air registration certificate/operating permit, NDEP must determine if any additional information is required to process the application. Within 15 days after receiving adequate information, NDEP must make a preliminary determination to issue or deny the certificate/permit. After a 30-day public comment period, but within 75 days after receiving adequate information, the NDEP must then make a final decision to issue or deny the certificate/permit.

**Key Issues**: The State of Nevada may cause further delays in the site characterization program by making repeated requests for additional information and/or denying this permit on insubstantial grounds.

## FEDERAL PERMITS & APPROVALS

### 1. FLOODPLAIN EXECUTIVE ORDER COMPLIANCE

**Authority**: Executive Order 11988, Floodplain Management, as amended by Executive Order 12148; 10 CFR 1022.

**Applicable Activities**: Drill holes, drill pads, ESF pads, trenching, and construction of dirt roads, if located in a floodplain.

**Requirements**: Publication of notice of involvement (NOI) in the Federal Register, followed by a public comment period and preparation of a floodplain assessment, describing the mitigative measures that may be taken and the alternatives that may be implemented to avoid potential harm to the floodplain. If, after reviewing and evaluating public comments, DOE finds that alternatives are not practicable, a statement of findings must be published in the Federal Register.

**Current Status**: NOI for surface-based testing expected 06/90. Floodplain assessment for surface-based testing is currently being prepared by the Yucca Mountain Project Office (YMPO). An NOI and supplemental floodplain assessment for ESF activities will be issued when ESF design is finalized.

**Timeframe**: Statement of findings may be issued no earlier than 30 days after NOI.

**Key Issues**: None identified at this time.

## 2. NATIVE AMERICAN CONSULTATIONS & PROTECTION OF CULTURAL RESOURCES

**Authority**: American Indian Religious Freedom Act of 1978 (AIRFA), (P.L. 95-341, 42 USC 1996, 36 CFR 296, 43 CFR 7).

**Applicable Activities**: All site characterization activities that may directly or indirectly affect sacred or religious sites.

**Requirements**: Consultation with Native American leaders to determine whether DOE actions will infringe on the free exercise of their religious rites; preparation of alternatives to minimize impacts; development of a programmatic agreement describing the steps that will be taken to (1) ensure that historic properties of cultural or religious value are identified and avoided, and (2) to ensure compliance with AIRFA.

**Current Status**: Programmatic agreement signed on 12/15/88.

**Timeframe**: N/A

**Key Issues**: None identified at this time.

## 3. ENDANGERED SPECIES ACT COMPLIANCE

**Authority**: Endangered Species Act of 1973 (ESA), (P.L. 93-205; 16 USC 1531-1543; 50 CFR 17.11, 17.12, and 17.94-96; 50 CFR 13, 222, 227, 402, 424, and 450-453)

**Applicable Activities**: Site characterization activities conducted in areas populated by the desert tortoise, a threatened species under the ESA.

**Requirements**: Consultation with the U.S. Fish and Wildlife Service (FWS) to ensure that site characterization activities do not result in adverse impacts on any threatened or endangered species.

**Current Status**: Formal consultation with FWS began on 11/14/89; "no jeopardy" biological opinion issued on 02/09/90; DOE and FWS are currently negotiating the mitigative measures that will be used to protect the desert tortoise during site characterization.

**Timeframe**: Within 3-6 months.

**Key Issues**: None identified at this time.

4. **FREE-USE PERMIT**

**Authority**: Materials Act of 1947 (30 USC 501-604, 40 CFR 3600 et seq.)

**Applicable Activities**: Extraction and use of sand and gravel for construction of drill pads, etc.

**Requirements**: Application to the Bureau of Land Management (BLM) must include a description of the location of the proposed borrow area or areas, the purpose for which the material will be used, and the amount of material that will be extracted.

**Current Status**: Application filed 07/11/89; decision will be made when consultation with FWS on the desert tortoise is complete.

**Timeframe**: Within 3-6 months.

**Key Issues**: None identified at this time.

5. **RCRA GENERATOR IDENTIFICATION NUMBER**

**Authority**: Resource Conservation and Recovery Act (RCRA), as amended (P.L. 94-580; 42 USC 6901-6987; 40 CFR 124, 240-247, 260-264, 266, 270, 271, and 280; Nevada Revised Statutes 459.400 et seq.; Nevada Administrative Code 444.570-444.748 and 444.8500-444.9335).

**Applicable Activities**: Generation, handling, management, and disposal of hazardous wastes.

**Requirements**: During site characterization, DOE must identify the amount of hazardous waste that is generated at Yucca Mountain on a monthly basis and comply with the State of Nevada's requirements for managing, storing, and disposing of the wastes off-site.

**Current Status**: RCRA generator I.D. number assigned 06/89 (no approval required).

**Timeframe**: N/A

**Key Issues**: None identified at this time.

6. **CLEAN WATER ACT SECTION 404 PERMIT**

**Authority**: Section 404 of the Clean Water Act (33 USC 1344), (administered by the U.S. Army Corps of Engineers [COE] under 33 CFR 330)

**Applicable Activities**: Site characterization activities involving the dredging and filling, of waters of the U.S.

**Requirements**: Compliance with 33 CFR 330, which includes a stipulation that the discharge may not jeopardize a threatened or endangered species.

**Current Status**: On 11/15/89, the COE determined that site characterization activities will be covered under the nationwide permit that allows for the discharge of dredged or fill material into isolated, non-tidal waters of the U.S. (33 CFR 330.5); final authorization is expected when FWS consultation on the desert tortoise is complete.

**Timeframe**: Within 3-6 months.

**Key Issues**: None identified at this time.

UNITED STATES COURT OF APPEALS

FOR THE NINTH CIRCUIT

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Consolidated Cases
Docket Numbers: 86-7308 and 90-70004

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STATE OF NEVADA, et al.

Petitioners,

v.

JAMES D. WATKINS, Secretary of The
United States Department of Energy

Respondent.

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# PETITIONERS' OPENING BRIEF

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TABLE OF CONTENTS

PAGE

I. TABLE OF AUTHORITIES . . . . . . . . . . . . . . . . . . . . . . i

II. STATEMENT OF ISSUES . . . . . . . . . . . . . . . . . . . . . . 1

A. Whether The State Of Nevada Has A Constitutional Right to Veto The Development Of A High-Level Radioactive Waste Repository At Yucca Mountain By Way Of Gubernatorial And Legislative Objection And The Legislature's Withholding Of Consent To A Cession Of Jurisdiction Pursuant To Art. I, Section 8, Cl. 17 Of The Constitution, Which Were Communicated To The Congress And The President; And, If So, Whether Congress May Restrict Or Has Restricted The State's Right To Exercise Its Right. . . . . . . . . . 1

B. Whether The State Of Nevada Has Transmitted A Valid And Effective Notice Of Disapproval Pursuant To Sections 116(b) and 115(b) Of The NWPA To The Senate And House Of Representatives, And, If So, Whether The Designation Of The Yucca Mountain Site For Development Of A Repository Is Disapproved. . . . 1

C. Whether The Secretary Of Energy Abused His Discretion In Failing To Set In Place Procedures For Addressing Disqualification Criteria Established In 10 C.F.R. 960 On A Continuing Basis And Whether His Failure To Determine That The Yucca Mountain Site Is Unsuitable For Development As A Repository Is Arbitrary, Capricious And An Abuse Of His Discretion. . . . . . 1

III. STATEMENT OF THE CASE . . . . . . . . . . . . . . . . . . . . 1

A. Jurisdiction Of Agency Whose Action Is The Subject Of Review . . . . . . . . 1

B. Timeliness Of Petition . . . . . . . . . . . . . . . . . 1

C. Basis Of The Court Of Appeals Jurisdiction . . . . . . 2

D. Standard Of Review . . . . . . . . . . . . . . . . . . 2

E. Nature Of The Case And Controversy . . . . . . . . . . 3

IV. ARGUMENT. . . . . . . . . . . . . . . . . . . . . . . . . . . 9

FIRST CAUSE OF ACTION . . . . . . . . . . . . . . . . . . . . 12

A. Nevada Has The Constitutional Right To Veto The Selection Of Yucca Mountain, Nevada As The Nation's High-Level Radioactive Waste Repository . . . 12

1. No Clause Of The Constitution Has Been Identified Which Has Preemptive Capability Over Nevada's Veto . . . 12

2. Nevada's Veto Is Not Preempted Under Traditional Preemption Analysis . . . . 14

3. Nevada Has An Absolute Constitutional Right To Veto The Repository; To The Extent Sections 115 and 116(b) Of The NWPA Actually Restrict Nevada's Veto Of The Repository, They Are Unconstitutional . . . 20

a. The Federal Enclave Clause . . . . . . . 20

b. Equal-Footing Doctrine . . . . . . . . . 27

c. The Privileges And Immunities Clause . . 30

d. The Tenth Amendment And Governmental Process Defect . . 36

e. The Port Preference Clause . . . . . . . 45

f. The Time Constraints Of Section 115(b) And 116(b) Are Unconstitutional . 47

B. Nevada Submitted A Valid And Effective Notice Of Disapproval Pursuant To Section 116(b), 42 U.S.C. 10136(b) . . 53

C. The Yucca Mountain Site Is Statutorily Disapproved And Constitutionally Precluded From Development As A Repository . . . . . . 56

1 The Yucca Mountain Site Is Statutorily Disapproved . . . 56

PAGE

SECOND CAUSE OF ACTION . . . . . . . . . . . . . . . . . . 59

D. The Secretary Was Required To Determine That The Site Is Unsuitable For Development As A Repository Based Upon: 1) Nevada's Veto And Notice Of Disapproval And 2) Technical Disqualifying Factors Identified By The State Of Nevada . . . . . 59

1. The Secretary Has A Duty To Disqualify The Yucca Mountain Site From Consideration As Soon As Disqualifying Conditions Are Known To Exist. . . . 61

2. The Secretary Has Not Established Sufficient Procedural And Analytical Processes To Disqualify Yucca Mountain On The Basis Of Currently Known Conditions At The Site . . . . . . 67

3. The Secretary Is Currently In Possession Of Evidence And Has Awareness Of Disqualifying Conditions At Yucca Mountain But Has Not Acted To Disqualify The Site . . 72

V. CONCLUSION. . . . . . . . . . . . . . . . . . . . . . . . 75

Certificate of Service

## TABLE OF AUTHORITIES

### CASES

Federal Cases

Alaska v. Troy,
258 U.S. 101 (1922) . . . . . . . . . . . . . . . . . . . . . . 45

Baker v. Carr,
369 U.S. 186 (1962) . . . . . . . . . . . . . . . . . . . . . . 58

Bank of Augusta v. Earle,
38 U.S. (13 Pet.) 519 (1839) . . . . . . . . . . . . . . . . . 31

Bradley v. School Bd.,
462 F.2d 1058 (4th Cir. 1972) . . . . . . . . . . . . . . . . 51

Burton v. United States,
202 U.S. 344 (1906) . . . . . . . . . . . . . . . . . . . . . . 32

Cappaert v. United States,
426 U.S. 128 (1976) . . . . . . . . . . . . . . . . . . . . . . 18

Carson Truckee Water Conservancy District v. Watt,
549 F. Supp. 704 (1982);
741 F.2d 257 (9th Cir. 1984) . . . . . . . . . . . . . . . . . 18

Chisholm v. Georgia,
2 U.S. (2 Dall.) 419 (1793) . . . . . . . . . . . . . . . . . 58

Cintron-Garcia v. Romero-Borcelo,
671 F.2d 1 (1st Cir. 1982) . . . . . . . . . . . . . . . . . . 52

City of Houston v. FAA
679 f.2D 1184 (1982) . . . . . . . . . . . . . . . . . . . . . 47

City of Milwaukee v. Block,
823 F.2d 1158 (7th Cir. 1987) . . . . . . . . . . . . . . . . 45

City of Philadelphia v. New Jersey,
437 U.S. 617 (1978) . . . . . . . . . . . . . . . . . . . 14, 29

Corfield v. Coryell,
6 Fed. Cas. 546 (C.C. Pa. 1823) . . . . . . . . . . . . . . . 30

Coyle v. Oklahoma,
221 U.S. 559 (1911) . . . . . . . . . . . . . . . . . . . . . . 27

DeBartolo Corp. v. Fla. Gulf Const. Trades Council,
485 U.S. 568 (1988) . . . . . . . . . . . . . . . . . . . . . . 52

Duke Power Co. v. Carolina Env. Study Group,
438 U.S. 59 (1978) . . . . . . . . . . . . . . . . . . . . . . . . 3

English v. General Electric Co.,
683 F. Supp. 1006 (E.D.N.C. 1988) . . . . . . . . . . . . . . . . 16

Escanaba Co. v. Chicago,
107 U.S. 678 (1883) . . . . . . . . . . . . . . . . . . . . . . . 29

Evergreen Waste Systems v. Metro Service Dist.,
820 R.2d 1482 (1987) . . . . . . . . . . . . . . . . . . . . . . . 15

Gaballah v. PG&E,
711 F. Supp. 988 (N.D. Cal. 1989) . . . . . . . . . . . . . . . . 16

Garcia v. San Antonio Metro,
469 U.S. 528 n.18 (1985) . . . . . . . . 10, 20, 38, 39, 40, 44, 51

Head Money Cases
112 U.S. 580 (1884) . . . . . . . . . . . . . . . . . . . . . .13, 14

Hicklin v. Orbeck,
437 U.S. 518 (1977) . . . . . . . . . . . . . . . . . . . . . 30, 31

Hodges v. United States,
203 U.S. 1 (1905) . . . . . . . . . . . . . . . . . . . . . . . . 31

Hughes v. Alexandria Scrap Corp.,
426 U.S. 794 (1976) . . . . . . . . . . . . . . . . . . . . . . . 14

Intern. Organization of Master Etc. v. Andrews,
831 F.2d 843 (9th Cir. 1987) . . . . . . . . . . . . . . . . . . . 31

James v. Dravo Contracting Co.,
302 U.S. 134 (1927) . . . . . . . . . . . . . . . . . . . . . 21-23

Johnson v. Chicago and Pacific Elevator Co.,
119 U.S. 388 (1886) . . . . . . . . . . . . . . . . . . . . . . . 45

King v. Smith,
392 U.S. 309 (1968) . . . . . . . . . . . . . . . . . . . . . . . 5

Louisiana Public Service Commission v.
Texas-New Orleans Railroad Co.,
284 U.S. 125 (1931) . . . . . . . . . . . . . . . . . . . . . . . 45

McCready v. Commonwealth of Virginia,
94 U.S. 391 (1877) . . . . . . . . . . . . . . . . . . . . . . . . 31

McCulloch v. Maryland, supra,
17 U.S. (4 Wheat.) 316 (1819) . . . . . . . . . . . . . . . . 35, 37

Morgan v. South Bend Community School Corp.,
797 F.2d 471-477 (7th Cir. 1986) . . . . . . . . . . . . . . . . 51

Munn v. Illinois,
94 U.S. 113 (1877) . . . . . . . . . . . . . . . . . . . . . . . 45

National League of Cities v. Usury,
426 U.S. 833 (1976) . . . . . . . . . . . . . . . . . . . . . . 38

Natural Resources Defense Council v. U.S. E.P.A.,
824 F.2d 1258 (1st Cir. 1987) . . . . . . . . . . . . . . . . . 18

Nolan v. California Coastal Commission,
483 U.S. 825 (1987) . . . . . . . . . . . . . . . . . . . . . . 12

Norris v. Lumbermen's Mutual Casualty Company,
881 F.2d 1144 (1989) . . . . . . . . . . . . . . . . . . . . . . 16

Norton v. Shelby County,
118 U.S. 425 (1886) . . . . . . . . . . . . . . . . . . . . . . 59

Oklahoma v. United States Civil Serv. Comm'n.,
330 U.S. 127 (1947) . . . . . . . . . . . . . . . . . . . . . . 5

Pacific Gas & Electric v. Energy Resources Commission,
461 U.S. 190 (1983) . . . . . . . . . . . . . . . . . . 15, 28, 29

Paul v. Com. of Virginia,
75 U.S. (8 Wall.) 168 (1873) . . . . . . . . . . . . . . . . . . 31

Paul v. United States,
371 U.S. 245 (1963) . . . . . . . . . . . . . . . . . . . . . . 25

Pennsylvania v. New Jersey,
426 U.S. 660 (1976) . . . . . . . . . . . . . . . . . . . . . . 33

Pennsylvania v. The Wheeling and Belmont Bridge Co.,
59 U.S. 421 (1856) . . . . . . . . . . . . . . . . . . . . 45, 46

Pollard's Lessee v. Hagan,
3 How. (44 U.S.) 212 (1845) . . . . . . . . . . . . . . . . . .27

Rivera v. American Nat'l. Property & Casualty,
105 Nev. Ad. Op. 133 (November 27, 1989) . . . . . . . . . . . 56

Rosado v. Wyman,
397 U.S. 397 (1970) . . . . . . . . . . . . . . . . . . . . . . 5

Silas Mason Co. v. Tax Commission,
302 U.S. 186 (1937) . . . . . . . . . . . . . . . . . . . . . . 25

Silkwood v. Kerr-McCee Corp.,
464 U.S. 238 (1984) . . . . . . . . . . 16

Slaughter House Cases
83 U.S. (16 Wall.) (1873) . . . . . . . . . . 31

South Carolina v. Baker,
485 U.S. 505 n.5 (1988) . . . . . . . . . . 38, 39, 43

South Carolina v. Georgia,
93 U.S. 4 (1876) . . . . . . . . . . 45

State of Nevada, ex rel. Loux v. Herrington,
827 F.2d 1394 (1987) . . . . . . . . . . 2

Surplus Trading Co. v. Cook,
281 U.S. 647 (1930) . . . . . . . . . . 22

Texas v. White,
74 U.S. (7 Wall.) 700 (1869) . . . . . . . . . . 33

Toomer v. Witsell, supra.
334 U.S. 385 (1948) . . . . . . . . . . 35

Towsend v. Swank,
404 U.S. 282 (1971) . . . . . . . . . . 5

United Building & Constr. Trades v. Mayor,
465 U.S. 208 (1984) . . . . . . . . . . 14, 30, 35

United States v. Downy,
195 F. Supp. 581 (S.D. Ill. 1961) . . . . . . . . . . 52

United States v. Louisiana-Pacific Corp.,
754 F.2d 1[illegible]45 (9th Cir. 1985) . . . . . . . . . . 2

United States v. Mandel,
415 F. Supp. 1025 (D. Md. 1976) . . . . . . . . . . 52

United States v. Nevada,
Case No. CV-S-90-065-HDM.RJJ . . . . . . . . . . 7, 9, 26, 49

United States v. Oregon,
295 U.S. 1 (1935) . . . . . . . . . . 28

United States v. Ptasynski,
462 U.S. 74 n.10 (1983) . . . . . . . . . . 46

United States v. Texas,
339 U.S. 707 (1949) . . . . . . . . . . 27

Unity v. Burrage,
103 U.S. 447 (1880) . . . . . . . . . . . . . . . . . . . . 10

Ward v. State of Maryland,
79 U.S. (12 Wall.) 418 (1870) . . . . . . . . . . . . . . 31

White v. Massachusetts Council of Construction Employers, Inc.,
460 U.S. 204 (1983) . . . . . . . . . . . . . . . . . . . . 14

White v. Massachusetts Council of Construction Employers, Inc.,
460 U.S. 204 (1983) . . . . . . . . . . . . . . . . . . . . 14

## CONSTITUTIONAL PROVISIONS

### United States Constitution

Equal-Footing Doctrine . . . . . . . 13, 27, 28, 29, 33, 36, 45

General Welfare Clause
Article I, Section 8, Clause 1 . . . . . . . . . . . . . 13

Uniformity Clause
Article I, Section 8, Clause 1 . . . . . . . . . . . . . 46

Commerce Clause
Article I, Section 8, Clause 3 . . . . . . . . . . . . . 13

Federal Enclave Clause
Article I, Section 8,
Clause 17 . . . . . 1, 2, 8, 13, 21, 24, 25, 26, 27, 28, 48

Port Preference Clause
Article I, Section 9, Clause 6 . . . . . . . 13, 45, 46, 47

Article III . . . . . . . . . . . . . . . . . . . . . . 33

Privileges and Immunities Clause
Article IV, Section 2 . . . . . . . 13, 30, 31, 32, 33, 35

Article IV, Section 3 . . . . . . . . . . . . . . . . . 13

Guarantee Clause
Article IV, Section 4 . . . . . . . . . . . . . 13, 51, 52

Supremacy Clause
Article VI, Clause 2 . . . . . . . . . . 14, 32, 34, 36, 43

Amendment V . . . . . . . . . . . . . . . . . . . . . 11, 13

Amendment IX . . . . . . . . . . . . . . . . . . . . 13, 34

Amendment X . . . . . . . . 13, 34, 36, 37, 38, 39, 40, 43, 44, 52

Nevada Constitution

Article 4, Section 2 . . . . . . . . . . . . . . . . . . . . . 51

Article 5, Section 9 . . . . . . . . . . . . . . . . . . . . . 51

## STATUTES

Federal Statutes

40 U.S.C. 255 . . . . . . . . . . . . . . . . . . . . . . . . 8, 25

Safe Drinking Water Act
    42 U.S.C. 300h(b)(3)(c) . . . . . . . . . . . . . . . . . 19

Atomic Energy Act of 1954
    42 U.S.C. 2011-2281 . . . . . . . . . . . . . . . . . . . 3

    Section 271
        42 U.S.C. 2018 . . . . . . . . . . . . . . . . . . 16

    Section 274(k)
        42 U.S.C. 2021(k) . . . . . . . . . . . . . . . . . 16

Energy Reorganization Act of 1974
    42 U.S.C. 5801(a) . . . . . . . . . . . . . . . . . . . . 3

Nuclear Waste Policy Act of 1982, P.L. 97-425
    42 U.S.C. 10101 *et seq.* . . . . . . . . . . . . 4, 13, 24, 61

    Section 111
        42 U.S.C. 10131 . . . . . . . . . . . . . . . . 10, 11

    Section 111(a)(6)
        42 U.S.C. 10131(a)(6) . . . . . . . . . . . . . . . 61

    Section 112
        42 U.S.C. 10132 . . . . . . . . . . . . . . . . . . 65

    Section 112(a)
        42 U.S.C. 10132(a) . . . . . . . . . . . . . . . 62, 66

    Section 113(c)(3) . . . . . . . . . . . . . 1, 62, 66, 67, 73
        42 U.S.C. 10133(c)(3) . . . . . . . . . 1, 58, 59, 60, 62

    Section 113(c)(3)(F)
        42 U.S.C. 10133(c)(3)(F) . . . . . . . . . . . . 56, 75

Section 114
42 U.S.C. 10134 . . . . . . . . . . . . . . . . . . . . 54

Section 114(a)(1)
42 U.S.C. 10134(a)(1) . . . . . . . . . . . . . . . . 55

Section 114(a)(2)(A)
42 U.S.C. 10134(a)(2)(A) . . . . . . . . . . . . . 54, 55

Section 115
42 U.S.C. 10134 . . . . . . . . . . . . . . 20, 36, 41, 60

Section 115(b)
42 U.S.C. 10135(b) . . . . . . . . . . . . . 1, 47, 50, 52

Section 115(c)
42 U.S.C. 10135(c) . . . . . . . . . . . . . . . . . 57, 58

Section 115(d)
42 U.S.C. 10135(d) . . . . . . . . . . . . . . . . . . . 57

Section 115(e) . . . . . . . . . . . . . . . . . . . . . . . 57

Section 115(f)
42 U.S.C. 10135(f) . . . . . . . . . . . . . . . . . . . 57

Section 116(b)
42 U.S.C. 10136(b) . . . 1, 6, 20, 41, 47, 49, 51, 52
42 U.S.C. 10136(b) (cont'd) . . . . . . . . . 53, 54, 59

Section 116(b)(1)
42 U.S.C. 10136(b)(1) . . . . . . . . . . . . . . . 49, 53

Section 116(b)(2)
42 U.S.C. 10136(b)(2) . . . . . . . . . . . . 30, 50, 56

Section 119
42 U.S.C. 10139 . . . . . . . . . . . . . . . . . . . . . . 2

Section 170(a)
42 U.S.C. 10173(a) . . . . . . . . . . . . . . . . . . . 47

Section 175(b)(13)
42 U.S.C. 10174a(b)(13) . . . . . . . . . . . . . . . 47

Section 302
42 U.S.C. 10222 . . . . . . . . . . . . . . . . . . . . 13
42 U.S.C. 10222(b)(4) . . . . . . . . . . . . . . . . . 32

Budget Reconciliation Act, Title V,
Public Law 100-203 (Nuclear Waste
Policy Act Amendments Act) . . . . 5, 13, 34, 37, 40, 41, 46, 47

Federal Land Policy and Management Act

Section 204
  43 U.S.C. 1714 . . . . . . . . . . . . . . . . . . . . 8

HR 4567, 100th Congress . . . . . . . . . . . . . . . . . 44

HR 2696, 101st Congress . . . . . . . . . . . . . . . . . 44

Nevada Statutes

NRS 47.250(13) . . . . . . . . . . . . . . . . . . . . . . 56

NRS Chapter 328 . . . . . . . . . . . . . . . . . . 8, 23, 26

NRS 328.075 . . . . . . . . . . . . . . . . . . . . . . . 55

NRS 459.910 (AB 222) . . . . . . . . . . . . . 6, 12, 14, 23

Legislative Resolutions

Assembly Joint Resolution, AJR 4 . . 5, 6, 7, 12, 23, 56, 60, 75

Assembly Joint Resolution, AJR 6 . . 5, 6, 7, 12, 15, 17, 23, 26
  AJR 6 (cont'd) . . . . . . . . . . . . . . . . 35, 56, 60, 75

REGULATIONS

Federal Regulations

3 C.F.R. 554 . . . . . . . . . . . . . . . . . . . . . . . 12

10 C.F.R. Part 60 . . . . . . . . . . . . . . . . 17, 55, 64, 71
  10 C.F.R. 60.113(a) . . . . . . . . . . . . . . . . . . 17
  10 C.F.R. 60.113(a)(2) . . . . . . . . . . . . . . . . . 65
  10 C.F.R. 60.121 . . . . . . . . . . . . . . . 8, 21, 22, 55

10 C.F.R. Part 960 . 1, 2, 7, 60, 61, 62, 66, 68, 70, 71, 72, 74
  10 C.F.R. 960.3-1-4-2 . . . . . . . . . . . . . . . . . 63
  10 C.F.R. 960.3-1-5 . . . . . . . . . . . . . . . . . . 66
  10 C.F.R. 960.4-2-1 . . . . . . . . . . . . . . . . . . 64
  10 C.F.R. 960.4-2-1(d) . . . . . . . . . . . . . . . . . 66

40 C.F.R. 144.3 . . . . . . . . . . . . . . . . . . . . . 19

40 C.F.R. 144.6(d) . . . . . . . . . . . . . . . . . . . . 19

40 C.F.R. 144.13 . . . . . . . . . . . . . . . . . . . . . 19

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Federalism For A Third Century, 88 Colum. L.Rev. . . . . 52

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Is Such A State Choice Preempted
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### Federal Register

49 F.R. 47714 et seq. . . . . . . . . . . . . . . . . . . . 61

49 F.R. 47722 . . . . . . . . . . . . . . . . . . . . . . . 68

49 F.R. 47724 . . . . . . . . . . . . . . . . . . . . 61, 64

49 F.R. 47728 . . . . . . . . . . . . . . . . . . . . . . . 63

49 F.R. 47747 . . . . . . . . . . . . . . . . . . . . . . . 60

49 F.R. 47767 . . . . . . . . . . . . . . . . . . . . . . . 62

53 F.R. 39088 . . . . . . . . . . . . . . . . . . . . . . . 19

### Congressional Record

128 Cong. Rec. S4334 . . . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. S4253 . . . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. S4258 . . . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. S15648-53 . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. S15668 . . . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. H10517-19 . . . . . . . . . . . . . . . . . 48

128 Cong. Rec. H10524 . . . . . . . . . . . . . . . . . . . 48

## II. STATEMENT OF ISSUES

This appeal presents the following issues:

A. **Whether The State Of Nevada Has A Constitutional Right to Veto The Development Of A High-Level Radioactive Waste Repository At Yucca Mountain By Way Of Gubernatorial And Legislative Objection And The Legislature's Withholding Of Consent To A Cession Of Jurisdiction Pursuant To Art. I, Section 8, Cl. 17 Of The Constitution, Which Were Communicated To The Congress And The President; And, If So, Whether Congress May Restrict Or Has Restricted The State's Right To Exercise Its Right.**

B. **Whether The State Of Nevada Has Transmitted A Valid And Effective Notice Of Disapproval Pursuant To Sections 116(b) and 115(b) Of The NWPA To The Senate And House Of Representatives, And, If So, Whether The Designation Of The Yucca Mountain Site For Development Of A Repository Is Disapproved.**

C. **Whether The Secretary Of Energy Abused His Discretion In Failing To Set In Place Procedures For Addressing Disqualification Criteria Established In 10 C.F.R. 960 On A Continuing Basis And Whether His Failure To Determine That The Yucca Mountain Site Is Unsuitable For Development As A Repository Is Arbitrary, Capricious And An Abuse Of His Discretion.**

## III. STATEMENT OF THE CASE

### A. Jurisdiction Of Agency Whose Action Is The Subject Of Review

This Petition for Judicial Review seeks review of final actions by the Secretary of Energy and his failure to act pursuant to his duties under the NWPA, as amended, particularly Section 113(c)(3), 42 U.S.C. 10133(c)(3). These cases are not before this Court based upon an administrative hearing record.

### B. Timeliness Of Petition

The Secretary of Energy's failure to act by advising Congress of the disqualification of the Yucca Mountain site pursuant to Section 113(c)(3) of the NWPA occurred on November 29, 1989. AR 2,[1] ER 29, Appendix p. 172. His final action repudiating Nevada's notice of

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[1] Unless otherwise indicated references to the Administrative Record applies to the record in Case No. 90-70004, ER 80.

Appendix p. 172. His final action repudiating Nevada's notice of disapproval and rejecting the State's notice of technical disqualification of the Yucca Mountain site occurred on February 28, 1990. ER 77. The State of Nevada timely filed its Petition For Judicial Review on January 5, 1990.

### C. Basis Of The Court Of Appeals Jurisdiction

This Court has jurisdiction pursuant to Section 119 of the NWPA, 42 U.S.C. 10139.

### D. Standard Of Review

The issue concerning the Art. I, § 8, cl. 17 requirement for Legislative consent to a cession of jurisdiction was first raised in Nevada's Comments On The U.S. Department of Energy Draft Environmental Assessment in March 1985. Appendix at pp. 28 to 33. The issue concerning the transmittal of a notice of disapproval was raised by transmittal of Assembly Joint Resolutions 4 and 6 to the Congress on April 19, 1989 and in the Nevada Governor's letter to the Secretary of Energy dated November 14, 1989. The issue involving the disqualification of the site based upon 10 C.F.R. 960 Disqualifying Conditions was raised in the November 14, 1989 letter from the Governor to Secretary Watkins. AR 1, ER 1.

The standard of review for all issues is de novo review. See e.g., State of Nevada, ex rel. Loux v. Herrington, 827 F.2d 1394, 1396 (1987); United States v. Louisiana-Pacific Corp., 754 F.2d 1445, 1447 (9th Cir. 1985).

### E. Nature Of The Case And Controversy

The basis for this case was laid 36 years ago when Congress passed the Atomic Energy Act of 1954. 42 U.S.C. 2011-2281. By the Act, Congress encouraged the private sector to become involved in the development of atomic energy for peaceful purposes under a program of federal regulation and licensing.[2] The Act provided for the licensing of private construction, ownership and operation of commercial nuclear power reactors for energy production under strict supervision by the Atomic Energy Commission (AEC). *See e.g.*, *Duke Power Co. v. Carolina Env. Study Group*, 438 U.S. 59, 63 (1978).

The utilities that ventured into the nuclear generated power business "were led to believe that nuclear fuel would be reprocessed and recycled." *See* J. Silberg, Storage And Disposal of Radioactive Waste, 13 Tulsa L.J., 788, 791 (1978). The utilities also "assumed that ultimate repositories would be built when they were needed." *Id*. at 792. By 1978, Jay Silberg, attorney for the intervenors in these cases, wrote:

> The industry organizations active in the nuclear field, such as the Atomic Industrial Forum, Edison Electrical Institute, and American Nuclear Energy Council are all vigorously pushing both the agencies and the Congress to enact solutions.

*Id*. at 792. On October 18, 1977, DOE announced that it would accept and take title to spent fuel which has been discharged from commercial nuclear reactors, and they would be responsible for both the storage and the ultimate disposal of that fuel. Id. at 795. They needed a political commitment, however, that could not be given by DOE but which, they believed, could be given by Congress. Id.

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[2] The Energy Reorganization Act of 1974 altered the promotional objectives of the AEA in favor of increasing "the efficiency, reliability of use of, *all energy sources* to meet the needs of present and future generations, . . . 42 U.S.C. 5801(a) (emphasis added).

> We need Congress to establish time limits, both for DOE to come in with a program, one that is not going to change, and for that program to proceed to the selection of a site and construction of a facility.

Id. at 800.

The utility groups lobbied their representatives in Congress for a Congressional solution to their problem. The result was the Nuclear Waste Policy Act of 1982 (NWPA), P.L. 97-425, 42 U.S.C. §§ 10101 et seq. Congress established a program for the DOE to follow and established time limits for the selection of a site and the construction of a facility. The NWPA incorporated the things Mr. Silberg suggested were needed: 1) a date certain for the repository to be in operation (Id. at 797); 2) a relaxation of the requirements of the National Environmental Policy Act (Id.); 3) a resolution of jurisdictional conflicts between the NRC, EPA and DOE (Id.); 4) a fee to be imposed on the utilities (Id.); 5) retrievability of the spent fuel (Id. at 799); 6) public acceptance and State participation (Id. at 800); and 7) financial incentives to encourage states to volunteer (Id.).

The time schedules established in the NWPA were not met, however, even though billions of dollars were spent by the DOE in the attempt. See e.g., Appendix at pp. 1 to 9. In 1987, Congress again addressed the problem and amended the NWPA in a way that has brought the State of Nevada, the utility groups and the Secretary of Energy to this Court. In December of 1987, Congress abandoned the compromises which had permitted the NWPA to be enacted. Instead of a national search for a suitable site to store the nation's high-level radioactive waste, on December 15, 1987, conferees from the House of Representatives and the Senate met and agreed to substantially redirect the nuclear waste program by selecting Yucca Mountain, Nevada, as the sole site to be characterized, thereby abandoning the site selection methodology prescribed in the NWPA. The extensive amendments were contained in Title V of the Budget Reconciliation Act, Public Law 100-203, referred to as the Nuclear Waste Policy Act Amendments Act of 1987 (Amendments Act). No Nevada Representatives were included in any of the conference committee discussions. In this milieu of political isolation, Nevada was selected to shoulder the entire burden of a highly radioactive and hazardous waste disposal facility no other state wanted.

Nevada has rejected any and all benefits emanating from the NWPA, as amended, and has not permitted itself to be co-opted by the utility/federal undertaking. Such is Nevada's right.[3]

On April 6, 1989, the Nevada Legislature enacted two resolutions, AJR 4 and AJR 6, which were approved by the Governor on April 17, 1989. See copies of the resolutions at pp. 10 and 11 of the Appendix. Assembly Joint Resolution 4, expressed the Nevada Legislature's "adamant opposition to the placement of a high-level radioactive waste repository in the State of Nevada." Assembly Joint Resolution 6 prohibited the Federal Government from establishing a repository at Yucca Mountain, Nevada, without the prior consent of the Nevada Legislature or a cession of jurisdiction pursuant to Chapter 328 of the Nevada Revised Statues, which consent and cession were refused. On April 19, 1989, both AJR 4 and AJR 6 were transmitted to the President, the United States Senate and the House of Representatives.

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[3] See e.g., Towsend v. Swank, 404 U.S. 282, 292 (1971); Rosado v. Wyman, 397 U.S. 397, 420 (1970); King v. Smith, 392 U.S. 309, 316 (1968); Oklahoma v. United States Civil Serv. Comm'n., 330 U.S. 127, 143-144 (1947).

On June 28, 1989, the Nevada Legislature enacted AB (222) now codified as NRS (Nevada Revised Statutes) 459.910, which states:

> 1) It is unlawful for any person or governmental entity to store high-level radioactive waste in Nevada.
> 2) As used in this section, unless the context otherwise requires, "high-level radioactive waste" has the meaning ascribed to that term in 10 C.F.R. § 60.2.

See Appendix at p. 12 for a copy of NRS 459.910.

On September 18, 1989, the Nevada Governor, Bob Miller, requested an opinion from the Nevada Attorney General concerning the status of the repository program and the implications for various environmental permit applications filed by the DOE based upon his belief and his intention that AJR 4 and AJR 6 constituted a legitimate and valid state veto and a notice of disapproval pursuant to Section 116(b), 42 U.S.C., 10136(b), of the NWPA. See Appendix at p. 27 for a copy of the Governor's letter. The Attorney General, in a letter opinion dated November 1, 1989, agreed that the Governor correctly characterized AJR 4 and AJR 6 as a notice of disapproval authorized by Section 116(b). See ER 56 to 76. He further stated his opinion that the Yucca Mountain site has been disapproved by inaction from Congress. See ER 75.

On November 14, 1989, Nevada's Governor transmitted to Secretary of Energy James D. Watkins a notice that the Yucca Mountain site is disqualified from further consideration based upon the State's Notice of Disapproval and the inability of the site to meet certain technical conditions referenced to criteria established by the Department of Energy in site suitability guidelines promulgated in 10 C.F.R. Part 960.[6] See ER 1 to 28 for a copy of the Governor's letter to the Secretary.

On November 29, 1989, Secretary of Energy James D. Watkins transmitted a "Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program," in which he made it clear that he would not recognize the State's notice of disapproval or disqualify the site based upon the notice of disapproval or the technical Disqualifying Conditions. See Appendix at pp. 172 to 202.

The Secretary has confirmed his position by inducing the United States Department of Justice to file an action in the United States District Court for the District of Nevada styled United States v. Nevada, Case No. CV-S-90-065-HDM.RJJ, for a declaratory judgment "declaring that the submission of AJR 4 and AJR 6 by the State of Nevada to the United States House of Representatives on April 19, 1989 did not constitute a valid and effective notice of disapproval pursuant to Section 116(b) of the NWPA . . . ." ER 34 to 55, 53. By letter dated February 28, 1990, addressed to the Governor of Nevada, the Secretary rejected the State's contention that Yucca Mountain should be disqualified because the presence of technical conditions rendered the site unsuitable for development as a repository. ER 77 to 78 .

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[6] Nevada has challenged the validity of the guidelines in Nevada v. Watkins, Case No. 85-7308. In demonstrating that the Secretary should have made a determination of unsuitability, under the guidelines, Nevada does not concede their validity or retreat from the State's petition for review in Case No. 85-7308.

The first of the two cases consolidated, herein, Case No. 86-7308, raises the issue whether the Secretary of Energy must establish the requisite jurisdiction over the Yucca Mountain site pursuant to NRC regulation 10 C.F.R. 60.121 and Art. I, sec. 8, cl. 17 of the Constitution requiring state legislative consent to a cession of jurisdiction. The Secretary was advised as early as April 24, 1985 in the State of Nevada's comments to the DOE's Draft Environmental Assessment, DOE/RW-0012, that pursuant to 40 U.S.C. 255 the Secretary must secure from the State of Nevada "consent to or cession of such jurisdiction, exclusive or partial, not theretofore, obtained, over any such lands or interests as he may deem desirable and indicate acceptance of such jurisdiction on behalf of the United States . . ." See Appendix at pp. 28 to 33, 31.

In disregard of the State's comments, the Secretary acquired a right-of-way reservation from the Bureau of Land Management for access authorization which is the subject of the appeal by the State of Nevada in Case No. 89-15272 being briefed concurrently, herewith. The State seeks a mandate of this Court in Case No. 86-7308 to direct the Secretary to obtain a Congressional withdrawal pursuant to Section 204 of the Federal Land Policy and Management Act and acquire the contemporaneous consent of the Nevada Legislature pursuant to Chapter 328 of the Nevada Revised Statutes as required by Art. I, sec. 8, cl.

17 before pursuing site characterization at Yucca Mountain. If this Court agrees with Nevada's contention that a Congressional withdrawal and State Legislative consent is necessary, Case No. 89-15272 will be rendered largely academic, if not moot.

As noted, the Governor and the Nevada Legislature have gone on record as refusing a cession of jurisdiction and consent to the proposed repository at Yucca Mountain, as well as expressing their adamant opposition to the placement of a repository at Yucca Mountain. The statutory and constitutional implications of the State's Legislative and Executive actions are subsumed in the issues of the First Cause of Action of the second case being briefed herein, Case No. 90-70004. A favorable ruling from this Court upholding Nevada's veto and/or the Congressional disapproval of the site will dispose of all issues as to all parties in all of the cases.

A third case, not a part of the present briefings in this Court, United States v. Nevada, CV-S-90-065-HDM.RJJ, raises identical issues as those in the First Cause of Action in Case No. 90-70004.

## IV

## ARGUMENT

The conspicuous aspect of the federal/state conflict involved in these cases is not one in which Nevada's interests are pitted against a federal governmental interest, it is one in which Nevada's interest in protecting its economy and environment are pitted against private interests which are being promoted by the Federal Government as agent of those private interests. This Court must pierce the veil of that alliance in applying applicable constitutional law to the facts of these cases. Nevada contends that the Federal Government is simply the alter ego of the 28 utilities that have intervened in these cases.

Because the NWPA, as amended, operates only with respect to waste disposal problems created by identifiable entities, the nuclear utilities and their private concerns, the Act is not a public law at all; it is a private or special Act masquerading as a public act.[5] See e.g., Unity v. Burrage, 103 U.S. 447, 454 (1880).

In effect, Congress recognized that it encouraged the nuclear utilities to get into the nuclear generated power business and permitted them to accumulate spent fuel in pools of water at the reactors. Having done so, the Congress voluntarily assumed the responsibility in the NWPA to provide for permanent disposal of the waste. The Congress recognized both the federal responsibility created by the NWPA and the private nature of the obligation created by the generators of the waste in Section 111 of the NWPA, 42 U.S.C. 10131, as follows:

> The Congress finds that--
>
> * * *
>
> (4) While the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such spent nuclear fuel as may be disposed of in order to protect the public health and safety and the environment, the

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[5] Justice Powell's well reasoned dissent in Garcia v. San Antonio Metro, 469 U.S. 528, 576 n.18 (1985), recognized the nature of the governmental problem:

> Moreover, we have witnessed in recent years the rise of numerous special interest groups that engage in sophisticated lobbying, and make substantial campaign contributions to some Members of Congress. These groups are thought to have significant influence in the shaping and enactment of certain types of legislation. Contrary to the Court's view, a "political process" that functions in this way is unlikely to safeguard the sovereign rights of States and localities. See n.9, supra.

> costs of such disposal should be the responsibility of the generators and owners of such waste and spent fuel;
>
> (5) The generators and owners of high-level radioactive waste and spent nuclear fuel have the primary responsibility to provide for, and the responsibility to pay the costs of the interim storage of such waste and spent fuel until such waste is accepted by the Secretary of Energy in accordance with the provisions of the Act.

The Congressional finding, recognizing the federal responsibility, must be read with subsection (b) of Section 111 which, in the first instance, created the federal responsibility which is recognized in the finding:

> Purposes--The purpose of this subtitle are--
>
> * * *
>
> 2) to establish the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel; (emphasis added). . . .

Nevada does not challenge Congress' power to recognize its moral responsibility, if that is what it is, to provide for a permanent solution to the waste problem. Jeopardizing, if not sacrificing, the economic interests of Nevada citizens and the quality of their lives to satisfy the federal obligation, however, is like imposing the entire debt for the Saving and Loan bailout or any other national debt or obligation on the citizens of a single state. In addition to the sundry constitutional infirmities discussed, herein, the NWPA program to site a repository as directed against the interests of individual Nevada citizens and business entities does not comport with Fifth Amendment notions of due process and equal protection.[6] Furthermore, the NWPA's transfer of the burden flies in the face of thousands of years of civilized society which repudiates legal efforts to force one man to pay the debts of another man or of society.[7] See e.g., Nolan v. California Coastal Commission, 483 U.S. 825 (1987).

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[6] We note the due process and equal protection problems associated with a federal undertaking that has substantial potential for damage to private property and business interests, in passing, recognizing that the State may not have standing to represent private individuals as to those issues.

## FIRST CAUSE OF ACTION

### A. Nevada Has The Constitutional Right To Veto The Selection Of Yucca Mountain, Nevada As The Nation's High-Level Radioactive Waste Repository

### 1. No Clause Of The Constitution Has Been Identified Which Has Preemptive Capability Over Nevada's Veto

The Secretary of Energy and the State of Nevada are at a constitutional impasse. The State contends that it has a constitutional right to veto the Yucca Mountain site selection by withholding its consent and refusing a cession of jurisdiction. The State further contends that it has unequivocally stated its opposition and veto in AJR 4, AJR 6 and AB 222 (codified at NRS 459.910). See Appendix at pp. 10 to 12 for copies of the resolutions and law. The Secretary, on the other hand, contends that:

> [A]JR 4, AJR 6, and AB 222, are preempted by the Nuclear Waste Policy Act of 1982, as amended, to the extent they create a direct conflict with the NWPA and stand as an obstacle to the accomplishment and execution of the purposes and objectives of the Act.

AR 7 at paragraph 54, p. 19, ER 53 and the Prayer For Relief (4), p. 20, ER 54. While "preemption" may be a useful term to describe a result oriented decision which the Secretary seeks, it is overly simplistic as a descriptor of the complex constitutional issues which underlie Nevada's efforts to avoid being targeted as an unconsenting host for a repository to store indefinitely a commercially generated waste byproduct which is the most radioactive and hazardous substance known to mankind.

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[7] 2) We note that the Secretary has not done a Takings Implication Assessment as required by President Reagan's Executive Order No. 12630, dated March 15, 1988, 3 C.F.R. 554 (1988).

The Secretary has not identified the clause of the constitution or the enumerated power upon which the Congress bases its preemptive capability.[8] If one does exist, it may not be exercised in the manner suggested by the Secretary. Express limitations on the powers of Congress, contained in Art. I, § 8, cl. 17; Art. I, § 9, cl. 6; and Art. IV, §§ 2, 3, and 4, as well as implied limitations emanating from the Fifth, Ninth and Tenth Amendments, the equal-footing doctrine, federalism and inherent State sovereignty condition preemptive power in the circumstances of these cases.

The Nuclear Waste Policy Act and the 1987 Amendments identify the Department of Energy and its Secretary as market participants in nuclear waste disposal. The NWPA does not regulate nuclear waste disposal. Nor does it regulate commerce "among the several States." Art. I, § 8, cl. 3. It assigns the Department of Energy proprietary functions to take title to and dispose of materials produced by non-regulatory, non-governmental entities, i.e., nuclear utilities.[9]

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[8] Neither the General Welfare Clause nor the Commerce Clause are available to the Secretary as having preemptive capability. Neither Clause is applicable. The General Welfare Clause is part of the taxing power in Art. I, § 8, cl. 1. The proposed solution to the nuclear waste problem does not contemplate funding with general taxes but with a nuclear power user fee. The nuclear waste fund established by section 302 of the NWPA, 42 U.S.C. 10222, is not a tax. The General Welfare Clause, therefore, is not applicable. See e.g., The Head Money Cases, 112 U.S. 580, 595-96 (1884). Note 9, infra, discusses the inapplicability of the Commerce Clause.

While we must await the Secretary's Answering Brief to determine what clause of the Constitution, if any, he identifies for Congress' power, we address preemption in the broader, global sense.

### 2. Nevada's Veto Is Not Preempted Under Traditional Preemption Analysis

The Supreme Court held in City of Philadelphia v. New Jersey, 437 U.S. 617, 626-627 (1978) that in the absence of preemption a state is competent to object to and preclude the shipment of all of a particular type of waste into the state provided it may be accomplished without discriminating against interstate commerce. Nevada has enacted such a statute. NRS 459.910 provides:

> 1) It is unlawful for any person or governmental entity to store high-level radioactive waste in Nevada.
> 2) As used in this section, unless the context otherwise requires, 'high-level radioactive waste' has the meaning ascribed to that term in 10 C.F.R. 60.2.

The prohibition contained in 459.910(1) applies to "any person or governmental entity" and, therefore, does not discriminate against interstate commerce or discriminate on any other basis. See also Evergreen Waste Systems v. Metro Service Dist., 820 F.2d 1482 (1987). The only question, therefore, is whether it is preempted, assuming for the sake of argument only, that there is a clause in the Constitution which provides Congress with preemptive capability. See e.g., Engdahl, Preemptive Capability of Federal Power, 45 U. Col. L.Rev. 51, 69 (1973).

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[9] The fact that the Secretary has entered into contracts with the generators of high-level radioactive waste and spent nuclear fuel pursuant to authority prescribed by Section 302(a) "for the acceptance of title, subsequent transportation, and disposal of such waste or fuel" does not rise to the level of "mere incident of the regulation of commerce". See the Head Money Cases, 112 U.S. 580, 595 (1884). As such, the Secretary is "acting as a market participant rather than a market regulator." United Building & Constr. Trades v. Mayor, 465 U.S. 208, 213 (1984); see, also, White v. Massachusetts Council of Construction Employers, Inc., 460 U.S. 204 (1983); Hughes v. Alexandria Scrap Corp., 426 U.S. 794 (1976).

In his role as a market participant, the Secretary is precluded from using the Supremacy Clause to authorize his use of interstate commerce as a weapon to discriminate against the State of Nevada in contradistinction to its traditional use as a shield against discrimination in interstate commerce.

State regulation of the economic and environmental aspects of nuclear power generation is not preempted by federal regulation of nuclear materials. In Pacific Gas & Electric v. Energy Resources Commission, 461 U.S. 190 (1983), the Supreme Court held that states are not preempted with regard to economic and environmental aspects of nuclear power generation. The State of California's law prohibiting new reactor construction based upon the lack of a permanent means of waste disposal was not preempted because the law "was aimed at economic problems, not radiation hazards." Id. at 213, 223. See also L. Tribe, California Declines the Nuclear Gamble: Is Such A State Choice Preempted, 7 Ecology L.Q. 679-729 (1979).

The primary basis of the Nevada Legislature's objection to a continuation of the repository siting program as stated AJR 6 was socioeconomic and environmental protection. As originally introduced, the language of two "whereas" provisions stated the two reasons for the resolution as viewed by the thirty-two sponsors in the Nevada Assembly:

> Whereas, the placement of a perpetual repository for high-level radioactive waste in the State of Nevada could severely damage, if not, completely ruin, the economy and environment of this state; and

> Whereas, the United States has no right to destroy the economy and environment of this state, which the Nevada Legislature is empowered to protect and preserve; and . . . .

Appendix at p. 13.

The Legislature's concerns, directed to irreparable and uncompensated damage to the State's economy and environment, are interests which are not preempted. See Atomic Energy Act, Section 271, 42 U.S.C. 2018, and Section 274(k), 42 U.S.C. 2021(k); see also Silkwood v. Kerr-McGee Corp., 464 U.S. 238, 256 (1984); English v. General Electric Co., 683 F. Supp. 1006, 1010 (E.D.N.C. 1988); Gaballah v. PG&E, 711 F. Supp. 988, 991 (N.D. Cal. 1989); Norris v. Lumbermen's Mutual Casualty Company, 881 F.2d 1144, 1148-1150 (1989). Findings published by the Nevada Nuclear Waste Project Office (NWPO) and socioeconomic researchers suggest that the perceptions of risk and the negative imagery attending nuclear waste disposal when amplified by the media may significantly impact Nevada's tourism industry and in-migration for business and retirement purposes. See e.g., Nevada's Opening Brief in Case No. 89-15272, pp. 36 to 41; see also references in Appellant's Appendix (Case No. 89-15272) at pp. 21 to 134.

The NWPO has empaneled a Technical Review Committee composed of nationally known experts in the field of socioeconomics to serve as a peer review team for studies the NWPO has been conducting for several years under its oversight authority contained in the NWPA. The full Committee published a document in January 1990 entitled "Interim Statement Of The Technical Committee On The Yucca Mountain Socioeconomic Project". A copy of the document appears at p. 4 of the

Appellant's Appendix (Case No. 89-15272). The Committee concluded, _inter alia_, that:

> From the evidence now available, it appears that the designation of Yucca Mountain as the site for a repository has already had significant socioeconomic impacts on Nevada, and that, depending upon numerous decisions not yet made by federal, state, and local agencies as well as public reaction to future events, the development of the repository could have a profound effect upon the economy and quality of life of people of the region. This conclusion arises in part from observation of the effects on the political and social fabric of Nevada over the fourteen years since investigations commenced at Yucca Mountain, and in part, from emerging findings related to public perceptions of the risk of waste transportation, storage, and disposal.

Appellant's Appendix (Case No. 89-15272) at p. 7. The Nevada Legislature's findings relative to the socioeconomic endangerment insofar as it supports AJR 6 are uncontrovertible. In effect, Nevada opposes the construction of a repository and site characterization in contemplation of the construction of a repository on grounds that the economy of the southern Nevada area may be irreversibly damaged.

In terms of environmental endangerment, the tolerable releases to the accessible environment from the radioactive and hazardous wastes to be entombed in the repository are unacceptable to the Nevada Legislature and Governor. Regulations of the Nuclear Regulatory Commission (NRC) in 10 C.F.R. Part 60 provide that:

> "Containment of HLW [high-level waste] within the waste packages will be substantially complete for a period to be determined by the [Nuclear Regulatory] Commission taking into account the factors specified in [10 C.F.R.] § 60.113(b) provided, that such period shall be not less than 300 years nor more than 1,000 years after permanent closure of the geologic repository; . . . ."

10 C.F.R. § 60.113(a). Given the fact that there will be 30,000 to 50,000 waste containers in the repository containing up to 70,000 metric tons of the most radioactive and hazardous waste known to

mankind, the Nevada Legislature and Governor were well within their province to veto the proposed repository.

"Substantial containment" contemplates some transport of radioactive gases from the deteriorating waste containers first to the atmosphere and then offsite to the human environment which will adversely affect Nevada citizens and other life-forms under Nevada's protection. It also contemplates releases of radioactive and hazardous compounds into the local and regional groundwater systems that will affect underground sources of drinking water that are used for domestic and agricultural purposes throughout southern Nevada (especially heavy metals that remain a part of the wastes initial composition of the waste forever). Finally, it contemplates releases into the groundwater that will surface into the Ash Meadows and Death Valley National Monument water supplies and will adversely impact threatened and endangered species and critical habitat in these protected areas. See e.g., Cappaert v. United States, 426 U.S. 128 (1976). Endangered species have the highest priority over all federal projects; it is Nevada's prerogative to insist that they remain protected even at the expense of the proposed repository. See e.g., Carson Truckee Water Conservancy District v. Watt, 549 F. Supp. 704, 709 (1982); aff'd, 741 F.2d 257 (9th Cir. 1984).

In Natural Resources Defense Council v. U.S. E.P.A., 824 F.2d 1258, 1271 (1st Cir. 1987) the First Circuit Court of Appeals considered the question whether the storage of high-level waste in underground repositories constitutes underground injection according to the no endangerment provisions of the Safe Drinking Water Act, 42 U.S.C. 300h (b)(3)(c). As to this question, the Court stated:

> We conclude that the primary disposal method being considered, underground repositories, would likely constitute an underground injection under the SDWA.

See also 824 F.2d at 1281. The Court further found that the high-level waste standards promulgated by the EPA in 40 C.F.R. 191 would endanger drinking water and were, therefore, arbitrary and capricious insofar as the standards permitted degradation of drinking water outside of the controlled areas of the repository. The "clear federal policy to avoid endangering drinking water supplies through underground injection" (Id. at 1277) was also directed to State programs:

> The EPA was directed to see that, wherever necessary, the state had regulatory systems in place that would protect against future endangerment of drinking water supplies by underground injections. . . .

Id. Nevada exercises UIC regulatory authority under the Safe Drinking Water Act. See 40 C.F.R. Part 147; 53 F.R. 39088. Nevada authorities have determined that the repository and the exploratory shaft that must be constructed to characterize the site comprise a Class IV injection well which is prohibited. See Appellant's Appendix in Case No. 89-15272 at pp. 198 to 200; see also 40 C.F.R. 144.3 (definition of underground source of drinking water), 40 C.F.R. 144.6(d) (Classification of Class IV well), 40 C.F.R. 144.13 (prohibition of Class IV wells). It cannot be gainsaid that the Legislature was wrong in vetoing the repository on this ground alone.

The Nevada Legislature and Governor were exercising well established authority in vetoing the Yucca Mountain site on economic and environmental endangerment grounds. Such authority is not only not preempted, it is expressly encouraged in the manner and for the reasons adopted by the Legislature.

### 3. Nevada Has An Absolute Constitutional Right To Veto The Repository; To The Extent Sections 115 and 116(b) Of The NWPA Actually Restrict Nevada's Veto Of The Repository, They Are Unconstitutional

Nevada has an absolute constitutional right, unrelated to the notice of disapproval process created by Sections 115 and 116(b) of the NWPA, to veto the construction of a high-level nuclear waste repository and to refuse to consent to a cession of jurisdiction which would permit its construction. A number of constitutional principles when considered independently and together establish the proposition that Nevada's constitutional right to object is indeed absolute.

#### a. The Federal Enclave Clause[10]

Positive limitations in the Constitution restrict certain kinds of overreaching by Congress. "[L]ike the guarantee, in article IV, § 3, of state territorial integrity" the Constitution has carved out "express elements of state sovereignty that Congress may not employ its delegated powers to displace." Garcia v. San Antonio Metro, 469 U.S. 528, 550 (1985). An express limitation on Congress' Article I powers to invade the territorial and jurisdictional integrity of a state is contained in Article I, § 8, cl. 17 (the Federal Enclave Clause) as follows:

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[10] While we offer the arguments in this section for the purpose of demonstrating the absolute nature of Nevada's veto as a limitation on Sections 115 and 116(b) of the NWPA, the arguments in this section also comprise the primary points and authorities in support of Nevada's claims in Case No. 86-7308. To the extent other sections of this brief supplement the State of Nevada's right to dissent or withhold a cession of jurisdiction, they too, are offered in support of the claims in No. 86-7308, even though they are not specifically identified as such.

> Congress shall have Power . . .
>
> To exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten miles square) as may, by Cession of Particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-yards, and other needful Buildings;

While the construction of a subsurface geologic repository is not one of the express purposes stated in the Federal Enclave Clause, by interpretation, the United States Supreme Court has broadly construed the phrase "other needful buildings" as follows:

> We construe the phrase 'other needful buildings' as embracing whatever structures are found to be necessary in the performance of the functions of the Federal Government.

James v. Dravo Contracting Co., 302 U.S. 134, 143 (1927). In James the Court construed locks and dams to be within the term. A repository, by logical extension, is also within the definition of "other needful buildings."

The siting of a high-level nuclear waste repository is perhaps one of the clearest examples of federal activity on land which requires the acquisition of exclusive federal control and jurisdiction. The fact that the federal government is obligated to secure the property against any and all forms of human intrusion for 10,000 years is only one factor which requires this conclusion. A more specific requirement arises from 10 C.F.R. 60.121, promulgated by the Nuclear Regulatory Commission (NRC), which has the ultimate responsibility to license a proposed repository. The regulation reads as follows:

> The geologic repository operations area shall be located in or on lands that are either acquired lands under the jurisdiction and control of DOE or lands permanently withdrawn and reserved for its use.

Implicit in the NRC's jurisdiction and control requirement is that it not be subject to the vagaries of a shared jurisdiction with the State. If a divided jurisdiction was tolerable, there would have been no need for the NRC to promulgate 10 C.F.R. 60.121.

In Surplus Trading Co. v. Cook, 281 U.S. 647, 652 (1930), the United States Supreme Court construed the meaning of "exclusive legislation" as follows:

> The constitutional provision says that Congress shall have power to exercise 'exclusive legislation in all cases whatsoever' over a place so purchased for such a purpose. 'Exclusive legislation' is consistent only with exclusive jurisdiction. It can have no other meaning as to the seat of government, and what it means as to that it also means as to forts, magazines, arsenals, dock-yards, etc. That no divided jurisdiction is intended is not only shown by the terms employed but is a matter of public history. Why as to forts, magazines, arsenals, dock-yards, etc. is the power given made to depend on purchase with the consent of the legislature of the State if the jurisdiction of the United States is not to be exclusive and that of the State excluded?
>
> The question is not an open one. It long has been settled that where lands for such a purpose are purchased by the United States with the consent of the state legislature the jurisdiction theretofore residing in the State passes, in virtue of the constitutional provision, to the United States, thereby making the jurisdiction of the latter the sole jurisdiction.

Exclusive legislation, therefore, is equivalent to exclusive jurisdiction. See also James v. Dravo Contracting Co., supra, at 141.

The Nevada Legislature has enacted a procedure by which an officer or an agency or instrumentality of the United States may acquire a cession of all or a portion of the State's jurisdiction. See NRS Chapter 328. While a state may effectively condition its cession of jurisdiction and the United States may accept only that jurisdiction which will enable it to achieve the unimpeded fulfillment of the federal objective in using the property, nevertheless, the State's Legislature must expressly consent to any jurisdiction which is ceded. See e.g., James v. Dravo Contracting Co., supra.

On April 6, 1989, the Nevada Legislature enacted two joint resolutions, AJR 4 and AJR 6, and on June 28, 1989, the Nevada Legislature evenhandedly enacted AB 222 (NRS 459.910) which, when read with AJR 4 and AJR 6, establish a comprehensive legislative policy to exclude high-level radioactive waste storage from Nevada.

The legislative choices represented by AJR 4, AJR 6 and AB 222 represent the exercise of jurisdiction and sovereignty. The execution of the Legislature's policy which may result in the eventual denial of environmental and natural resource permits is also the exercise of jurisdiction.

It is the exercise of this jurisdiction, in this manner, which has and will continue to frustrate the federal repository program. It is appropriate that a state has the power through the exercise of its jurisdiction to protect its environment, economy and other interests against intrusions by the federal government which have a real and present danger of inflicting irreparable damage.

Before Nevada is condemned for exercising its governmental prerogative in the manner it has, it should be noted that the nuclear waste problem was created by the exercise by certain states of identical governmental prerogatives. Those states that have permitted the licensing of nuclear power generating facilities have, in effect, consented to the construction of facilities on the basis of economic and other reasons that not only extract usable energy from uranium fuel assemblies but has authorized the storage of spent fuel assemblies in pools of water at the reactor sites. Nevada has not consented to any of this. While the states that have reaped the benefits of their decision to consent may not be heard to complain of the loss of their right to withhold consent, Nevada is not in that group. Furthermore, it is incomprehensible that Nevada's right to withhold its consent should be extinguished by the collective enterprise in Congress of those that have surrendered it. Whatever justification there is for such a result, it is not based upon the Constitution.

The palliative to the constitutional dilemma imposed by limitations upon Congressional action is, of course, the creation of an Art. I, § 8, cl. 17 federal enclave. Literally thousands of such enclaves have been created and exist in circumstances not dissimilar to the repository program contemplated by the NWPA.[11]

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[11] From 1954 to 1957 the Interdepartmental Committee for the Study of Jurisdiction Over Federal Areas within the States examined the existing law and practice with respect to the exercise of state and federal power over federal property. Its findings were published in a two volume report: Part I: The Facts And Committee Recommendations (1956) and Part II: A Text Of The Law Of Legislative Jurisdiction (1957). The second volume is devoted primarily to the questions of state and federal power over federal enclaves. At page 46 of Part II, the Interdepartmental Committee noted:

> The Federal Government cannot, by unilateral action on its part, acquire legislative jurisdiction over any area within the exterior boundaries of a State. Article I, section

In cases where a federal enclave with exclusive federal jurisdiction is necessary, such as a repository for high-level radioactive waste, the inquiry is "whether the United States has acquired exclusive legislative authority so as to debar the State from exercising any legislative authority." Silas Mason Co. v. Tax Commission, 302 U.S. 186, 197 (1937). In Silas Mason the Court addressed the exclusive legislative authority issue:

> The acquisition of title by the United States is not sufficient to effect that exclusion. It must appear that the State, by consent or cession, has transferred to the United States that residuum of jurisdiction which otherwise it would be free to exercise . . . .

Id. In Paul v. United States, 371 U.S. 245, 264 (1963), the Supreme Court stated:

> But without the State's 'consent' the United States does not obtain the benefits of Art. I, § 8, cl. 17, its possession being simply that of an ordinary proprietor. James v. Dravo

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8, clause 17, of the Constitution, provides that legislative jurisdiction may be transferred pursuant to its terms only with the consent of the legislature of the State in which is located the area subject to the jurisdictional transfer. As was indicated in chapter II, the consent requirement of article I, section 8, clause 17, was intended by the framers of the Constitution to preserve the States' jurisdictional integrity against Federal encroachment.

See Appendix pp. 25 to 26.

A trend beginning with the enactment of 40 U.S.C. 255, away from the establishment of federal enclaves clothed with exclusive federal jurisdiction arose because, as to the more typical reservations, for forests, parks, or similar purposes exclusive federal jurisdiction was unnecessary and undesirable. Id. Part I, The Facts and Committee Recommendations, supra, at 10, 59-67. Appendix 15 to 24. The fact that Congress has been unable to produce anything in the way of an incentive except the exercise of brute political force does not recommend this approach to any other country in the world that is faced with a similar problem. The fact is that every country that has attempted the establishment of a high-level radioactive waste geologic repository has come to the conclusion that it must be accomplished upon a consensual basis at the local level.

> Contracting Co., 302 U.S. 134, 141-142. In that event, however, it was held in Ft. Leavenworth R. Co. v. Lowe, 114 U.S. 525, 541, 542, that a State could complete the 'exclusive' jurisdiction of the Federal Government over such an enclave by 'a cession of legislative authority and political jurisdiction.'

The "ordinary proprietor" status will not satisfy the jurisdictional requirements which permanent isolation of the nuclear waste requires.

Nevada is, admittedly, a hostile host for the facility that no other state will accept. It should be obvious that the State will likely exercise every power and every aspect of its inherent jurisdiction to frustrate the federal program. It is precisely these circumstances that Art. I, § 8, cl. 17 was intended to remedy.[12]

The Secretary of Energy cannot go forward with site characterization without necessary state permits. See United States v. Nevada, CV-S-90-065-HDM.RJJ. AR 7, ER 35. The Department of Energy, despite the State's demand, has continually refused to obtain the permanent withdrawal of land it needs to characterize Yucca Mountain with an appropriate jurisdictional base in terms of a cession of jurisdiction from the State pursuant to NRS Chapter 328. It is now too late as AJR 6 has denied, categorically, a cession of jurisdiction and, therefore, constitutes an absolute veto of the selection of the Yucca Mountain site for the purpose of a repository.

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[12] "The clause was born because of the vivid recollection of the members of the [Constitutional] Convention of harassment suffered by the Continental Congress at Philadelphia, in 1783, at the hands of a mob of soldiers and ex-soldiers whom the Pennsylvania authorities felt unable to restrain, and whose activities forced the Congress to move its meeting place to Princeton, N.J.." Part I: The Facts and Committee Recommendations, n.11.supra, at 7; see also The Federalist, No. 42 by Madison.

Even though the DOE has never sought a cession of jurisdiction, the Nevada Legislature was prompted to address the Art. I, § 8, cl. 17, cession of jurisdiction question in its 1989 session because the selection of Yucca Mountain by the Congress in 1987, in effect, constituted a de facto application for a cession of jurisdiction in keeping with the nature of the program and the selection of Yucca Mountain for repository purposes.

**b. Equal-Footing Doctrine**

The Equal-Footing Doctrine protects a state's political rights and sovereignty. See e.g., United States v. Texas, 339 U.S. 707, 716 (1949). In Coyle v. Oklahoma, 221 U.S. 559 (1911), the court struck down Congressional action forbidding the state's removal, after its admission in 1906, of its capitol from Guthrie to Oklahoma City prior to 1913. The Court, in striking the restriction, observed:

> Has Oklahoma been admitted upon an equal footing with the original States? If she has, she by virtue of her jurisdictional sovereignty as such a State may determine for her own people the proper location of the local seat of government. She is not equal in power to them if she cannot.

Id. at 579. In Pollard's Lessee v. Hagan, 3 How. (44 U.S.) 212 (1845), the Supreme Court considered the Equal-Footing Doctrine in relation to conflicting claims to a lot submerged by Mobile Bay in Alabama. One claimant supported his title through a grant from the United States; the other from the State of Alabama. The Court held that:

> To give to the United States the right to transfer to a citizen the title to the shores and the soils under the navigable waters, would be placing in their hands a weapon which might be wielded greatly to the injury of state sovereignty, and deprive the states of the power to exercise a numerous and important class of police powers." (emphasis added).

*Id.* at 230. In *United States v. Oregon*, 295 U.S. 1, 14 (1935), another equal-footing case, the Supreme Court further stated the relationship between sovereignty and the beds of navigable bodies of water as follows:

> Dominion over navigable waters and property in the soil under them are so identified with the sovereign power of government that a presumption against their separation from sovereignty must be indulged, in construing either grants by the sovereign of the lands to be held in private ownership or transfer of sovereignty itself.

The focus of the cases cited is upon political rights and sovereignty. Equal-footing relates to sovereignty and jurisdiction just as in the case of Art. I, § 8 cl. 17, the Federal Enclave Clause. The principle that the jurisdiction and sovereignty of a state may not be limited *vis a vis* other states except by the consent of that state is guaranteed by the Equal-Footing Doctrine. The principle that the jurisdiction and sovereignty of a state may not be diminished except by consent *vis a vis* other states in relation to the federal government as to federal facilities is guaranteed by the Federal Enclave Clause.

The significance of the court's holding in *Pacific Gas & Electric*, *supra*, is that the State of California's "historic police powers" were not deemed preempted with respect to certain aspects of the nuclear industry. Where economics and the environment were involved, matters traditionally left to State control, a state's jurisdiction and sovereignty over these matters were confirmed. *In re Consol. Edison Co. of N.Y., Inc.*, 7 NRC 31, 34 (1978), cited with approval in *Pacific Gas & Elec.*, *supra*, 461 U.S. at 207, n.18. If states generally can exercise such legislative power without risk of preemption, then Congress' purported preemption and restriction of Nevada's legislative power deprives Nevada of the equal-footing it otherwise enjoys with respect to the other states. The Equal-Footing Doctrine protects an unconsenting state's governmental prerogative to refuse to provide a solution to the nuclear utilities disposal problems created by non-preempted legislative decisions of other states. Simply put, if the other states are not preempted as to these decisions, preemption should not be imposed against the State of Nevada. The Nevada Legislature's refusal to accept all high-level radioactive waste is an exercise of the police power guaranteed to the states by the Equal-Footing Doctrine which has not and may not be preempted either in a comparative sense or an absolute sense.[13] Compare City of Philadelphia v. New Jersey, supra, 437 U.S. 617 (1978) with PG&E, supra.

Mr. Justice Field in Escanaba Co. v. Chicago, 107 U.S. 678, 689 (1883) wrote:

> Equality of constitutional right and power is the condition of all the States of the Union, old and new.

Justice Field's articulation of the Equal-Footing Doctrine should, by constitutional standards, be a recognition of the obvious, however,

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[13] Nevada has raised equal-footing claims in Case No. 89-15272 involving the nature and degree of infringement upon an unconsenting state's sovereignty and equal footing under the circumstances of that case. See Appellant's Opening Brief pp. 17 to 26. The issue in Case No. 89-15272 before this Court is limited to standing. The nature and degree of infringement on Nevada's equal footing relative to the Bureau of Land Management's approval of a right-of-way reservation based on a purported exercise of the United States' land holding function raise factual issues of degree which must await a trial on remand, assuming the State is successful in its bid to establish standing.

Nevada's presence in this Court demonstrates that there is often a major discrepancy between theory and practice when powerful special interests influence the Congress, as in the case of the 1987 amendments to the NWPA, to abandon constitutional norms in favor of expediency and self-serving protectionism.

Nevada has exercised its non-preempted equal-footing rights to veto the repository and submit a statutory notice of disapproval. Nothing in terms of timing constraints in Section 116(b)(2) should be permitted to alter that fact or its intended result. See section 3.f. herein at p. 47.

### c. The Privileges and Immunities Clause

Art. IV, § 2, cl. 1 states:

> The Citizens of each State shall be entitled to all Privileges and Immunities of Citizens in the several States.

This Court in Intern. Organization of Masters, Etc. v. Andrews, 831 F.2d 843, 845 (9th Cir. 1987) citing Hicklin v. Orbeck, 437 U.S. 518, 524 (1977) stated that:

> The purpose of this clause is, 'to place the citizens of each State upon the same footing with citizens of other States, so far as the advantages resulting from citizenship in those States are concerned.'

Further this Court observed that:

> The clause seeks to ensure the unity of the several states by protecting those interests of non-residents which are '"fundamental" to the promotion of interstate harmony.' United Bldg. and Constr. Trades Council v. City of Camden, 465 U.S. 208, 218 (1984).

In Justice Washington, in Corfield v. Coryell, 6 Fed. Cas. 546, 551 (C.C. Pa. 1823), stated an often cited interpretation of the Privileges And Immunities Clause as follows:

> The term "privileges and immunities," as used in the federal Constitution, Article 4, § 2, declaring that the citizens of each state should be entitled to all the privileges and immunities of citizens in the several states, are confined to those privileges and immunities which are in their nature fundamental, and which belong of right to the citizens of all free governments, and which have been enjoyed at all times by the citizens of the several states which compose the Union, from the time of their becoming free, independent, and sovereign. These may be comprehended under the heads of protection by the government, the enjoyment of life and liberty, with the right to acquire and possess property of every kind, and to pursue and obtain happiness and safety, subject, nevertheless, to such restraints as the government may justly prescribe for the general good of the whole.

*See also* *Bank of Augusta v. Earle*, 38 U.S. (13 Pet.) 519, 595 (1839); *Paul v. Com. of Virginia*, 75 U.S. (8 Wall.) 168, 180 (1873); *Ward v. State of Maryland*, 79 U.S. (12 Wall.) 418, 430 (1870); *Slaughter House Cases*, 83 U.S. (16 Wall.) 36, 76 (1873); *Hodges v. United States*, 203 U.S. 1, 15 (1905); *Hicklin v. Orbeck*, 437 U.S. 518, 524 (1977). While the general contours of the Clause have been charted, the courts have generally left a more specific meaning of "privileges and immunities" to be determined on a case-by-case approach. *See* *e.g.*, *McCready v. Commonwealth of Virginia*, 94 U.S. 391, 395 (1877).

Within the fundamental rights which have been recognized are the rights to protection by the government, the enjoyment of life and liberty, the right to acquire and possess property of every kind and to pursue and obtain happiness and safety.

The Privileges and Immunities Clause is implicated when a state law provides differential treatment to classes of citizens, e.g., residents and non-residents within the state, *see* *Intern. Organization of Master Etc. v. Andrews*, *supra* at 845. The clause should also be implicated when a *federal* law enacted through the lobbying efforts of the nuclear utilities directed toward the states' representatives in Congress[14] provides differential treatment to citizens of Nevada from that which these states provide to their own citizens.

The NWPA recognized that the United States government is acting as a representative of the generators of the high-level radioactive waste. See discussion, supra, at pp. 3-4, 9-12. The generators, in exchange for the benefit of the power of the federal government, agreed to pay for all of the costs of the government's program by the fee imposed upon them. 42 U.S.C., 10222(b)(4); see also discussion at pp. 3-4 and 9-12, supra. The utilities' ratepayers are the citizens of the states where nuclear power is generated. They are a discrete class of citizens who benefit from nuclear power plants and who will benefit from the removal of on-site nuclear waste. This discrete class of citizens enjoys a species of privileges and immunities at the expense of another discrete class of citizens who reside in Nevada if, acting through their representatives in Congress under the pretext of the Supremacy Clause, they invalidate, if this Court permits, the privileges and immunities enjoyed by citizens of Nevada while guaranteeing their own enjoyment of them.[15]

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[14] The Senators and Representatives in Congress are elected representatives of the individual states and do not hold their offices under the government of the United States. See Burton v. United States, 202 U.S. 344, 369-70 (1906). When they permit themselves to be lobbied successfully for a law which they would not permit to be enacted as to their own constituents, their actions violate the spirit and we think the letter of the Privileges and Immunities Clause. This conclusion follows from the fact that while they are being lobbied, they are acting as state representatives.

While the Clause guarantees on an individual basis that a citizen of one state may enjoy the privileges and the immunities accorded the citizens of other states while they are present in the other state, the Clause may also be read to protect the privileges and immunities of states, as political communities of citizens. The phrase "Citizens of each State" in the Clause when viewed in the collective sense is at least one definition of a State.[16] Thus, the clause may be restated to read:

> A State shall be entitled to all Privileges And Immunities of the several States.

As stated, the Privileges and Immunities Clause is simply a restatement of the Equal-Footing Doctrine. See discussion in the preceding section with respect to the equality of constitutional rights and privileges attending statehood.

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[15] The federal courts have generally pierced these arrangements in similar contexts to determine if the real parties in interest qualify under constitutional limitations to the benefits being conferred. For example, Art. III provides for original jurisdiction in the Supreme Court in all cases in which a state is a party. Where the state is simply litigating as a volunteer the personal claims of its citizens as a nominal plaintiff, the Court has declined to exercise its jurisdiction. See e.g., Pennsylvania v. New Jersey, 426 U.S. 660, 665-70 (1976).

[16] According to Chief Justice Chase in Texas v. White, 74 U.S. (7 Wall.) 700, 720-721 (1369):

> A state, in the ordinary sense of the Constitution, is a political community of free citizens, occupying a territory of defined boundaries, and organized under a government sanctioned and limited by a written constitution, and established by the consent of the governed. (emphasis added).

The United States is a republic, a union of states, exercising powers of a central government which are limited as enumerated. Nevada submits that, among the enumerated powers, no power exists which would permit forty-nine of the republic's members, acting under the pretext of the Supremacy Clause, to destroy the economy or environment of its politically weakest member. Such a result would deprive a state and the citizens of such state of the privileges and immunities of national citizenship and membership.

Regardless of whether one is talking about a single citizen, a group of citizens or the community of individuals which comprise the citizens of each state, other states either individually or collectively may not discriminate so as to deprive them of these fundamental rights. Of course, this is precisely what has occurred with the 1987 amendments to the NWPA. The states that have utilities which produce high-level nuclear waste have permitted their political representation in Congress to be used to endanger the enjoyment of life, property, happiness and safety of Nevada citizens and thereby spare their own citizens from the dangers of the highly radioactive and hazardous waste which their own power plants have generated. They were acting collectively in furtherance of self-serving ends and took unfair advantage of a defect in the governmental and political process which violated a number of constitutional precepts, including Nevada's Tenth Amendment rights and the Ninth Amendment rights of Nevada citizens . See further discussion on the Tenth Amendment governmental process defect point at section 3.d., pp. 36 to 44, infra.

Chief Justice Marshall, in *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 426 (1819), stated in relation to intergovernmental tax immunities that there is no power in one government to destroy what there is in the other to preserve. The Nevada Legislature stated in the sixth and seventh whereas clauses of AJR 6, in this regard:

> WHEREAS, The United States has a duty to protect the economy, environment and public health of this state, which the Nevada Legislature is empowered to protect and preserve, and,
>
> WHEREAS, The Federal Government has refused to assume full liability for any deleterious effects that could result from the placement of a repository for high-level radioactive waste in Nevada; . . . .

Appendix at p. 11.

In summary, the citizens of the State of Nevada both individually and collectively as a State enjoy privileges and immunities associated with their national citizenship which preclude a state or many states acting as a majority in Congress from discriminating against them in favor of their own citizenry.

Nevada residents have no chance to remedy at the polls the discrimination directed against them. *Cf*. *United Building & Constr. Trades v. Mayor*, *supra*, at 217. In the absence of relief from this Court, Nevada citizens are "restricted to the uncertain remedies afforded by diplomatic processes and official retaliation." Citing *Toomer v. Witsell*, 334 U.S. 385, 395 (1948). *Id*. Nevada citizens are justifiably incensed and their governmental institutions hostile.

The citizens of Nevada, through their elected representatives, have vetoed the location of a repository at Yucca Mountain based upon certain endangering conditions. The privileges and immunities which Nevada citizens are entitled under Art. IV, § 2 of the Constitution include the fundamental right to protection by the government established under the Nevada Constitution. Any attempt by Congress under Section 115 of the NWPA to nullify that protection or the citizens' rights to the objects of that protection, the preservation of their quality of life, would be an unconstitutional infringement of their privileges and immunities. Whether or not Congress has provided for a procedure to override Nevada's veto in Section 115 of the NWPA, therefore, is immaterial.

There are twelve states in addition to the State of Nevada that have laws which either directly prohibit the disposal or storage of spent nuclear fuel and radioactive waste or condition the disposal and storage of such waste upon the consent of the State Legislatures. See tabulation at pp. 34 to 36 of the Appendix.[17] It seems rather incredible that these twelve states have provided this immunity to their respective citizens, but the Secretary challenges on preemption grounds identical protection which the Nevada Legislature has afforded its citizens. The constitutional principles discussed herein do not permit this disparity of treatment through official federal action.

### d. The Tenth Amendment and Governmental Process Defect

Whether the discriminatory selection of Yucca Mountain is viewed in terms of a denial of Nevada's equal footing or a violation of the privileges and immunities of Nevada citizens, in either case, it demonstrates a defect in the national political processes and governmental processes which must be remedied in the instant case. Chief Justice Marshall in McCulloch v. Maryland, supra, at 421 declared:

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[17] Many of these states, if not all, permit the generation of such waste by permitting the licensing of nuclear power generating facilities. The inequities attending the use of the Congress and the Supremacy Clause to allow such states to divorce themselves from the burdens while reaping the benefits are apparent.

> Let the end be legitimate, let it be within the scope of the constitution, and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consistent with the letter and spirit of the constitution, are constitutional.

The processes which resulted in the selection of Nevada fail on all counts of Marshall's famous declaration.

On December 22, 1987, Congress enacted the Nuclear Waste Policy Amendments Act of 1987, Title V, Public Law 100-203. The Amendments Act amended provisions of the NWPA in a manner which essentially substituted the words: "State of Nevada and any affected unit of local government" at each and every place in the NWPA where the words "each State in which a candidate site for a repository is located", or words of similar import, occurred. In this manner, Congress abandoned the carefully crafted and negotiated compromises in the NWPA and singled out Yucca Mountain in the State of Nevada to be characterized, and if found suitable, to house the nation's first and probably only high-level nuclear waste repository. A brief legislative history of the Amendments as they wound their way through the Congress is included in the Appendix at pp. 37 to 56 (Excerpt of document appended to CR 19, Case No 89-15272, and minutes of the conference committee, December 15, 1987.). The Amendments finally became a part of the Omnibus Budget Reconciliation Act of 1987. As enacted, the Amendments deprive Nevada of Tenth Amendment rights and are, therefore, unconstitutional. They cannot, therefore, be used either directly or indirectly to limit Nevada's veto.

The Tenth Amendment and the concept of federalism are not nullities. The Supreme Court continues to speak approvingly of the concepts represented by those terms: "We use the Tenth Amendment to encompass any implied constitutional limitation on Congress' authority to regulate state activities, whether grounded in the Tenth Amendment itself or in principles of federalism derived generally from the Constitution." South Carolina v. Baker, 485 U.S. 505, 511 n.5 (1988). "[T]he attempt to draw the boundaries of state regulatory immunity in terms of traditional governmental function is not only unworkable but is also inconsistent with established principles of federalism and, indeed with those very federalism principles on which National League of Cities purported to rest." Garcia v. San Antonio Metropolitan Transit Authority, supra, 469 U.S. 528, 531 (1985) (citing National League of Cities v. Usury, 426 U.S. 833 (1976)). (emphasis supplied).

In Garcia, the majority stated, at 550-51, in overruling National League of Cities:

> Apart from the limitation on federal authority inherent in the delegated nature of Congress' Article I powers, the principle means chosen by the Framers to ensure the role of the States in the Federal system lies in the structure of the Federal Government itself. It is no novelty to observe that the composition of the Federal Government was designed in large part to protect the States from overreaching by Congress.

The Garcia majority held that "State sovereign interests, then, are more properly protected by procedural safeguards inherent in the structure of the federal system than by judicially created limitations on federal power." Id. at 552. While in the factual setting of

Garcia, "the internal safeguards of the political process [may] have performed as intended," (Id. at 556) it is clear that with respect to the NWPA Amendments Act of 1987 the internal safeguards of the political process totally departed from acceptable principles envisioned by the Framers and, in effect, abandoned the State of Nevada and left it politically isolated and powerless.

Nevada contends that the Tenth Amendment means more than the Garcia majority have stated. With appropriate concern, Nevada recognizes that the judicial power and wisdom of the federal courts are "all that stands between the remaining essentials of state sovereignty" and Congress' "under developed capacity for self-restraint." Id. at 588 (Justice O'Connor dissenting). We recognize that this Court is compelled to follow the majority's view, however, even with the majority's view, Congress' attempt to restrict Nevada's veto should fail in this case.

In South Carolina v. Baker, supra, the State of South Carolina argued that § 310(b)(1) of the Tax Equity Fiscal Responsibility Act of 1982 (TEFRA), Pub. L. 97-248, 96 Stat. 596, 26 U.S.C. § 103(j)(1), was unconstitutional, because it, in essence, required states to issue bonds in registered form, and "banned bearer bonds altogether without giving states the option to issue nonexempt bearer bonds", all in violation of the Tenth Amendment. Id. at 511. The Secretary of the Treasury argued that § 310 "survives Tenth Amendment scrutiny because a blanket prohibition by Congress on the issuance of bearer bonds can apply to states without violating the Tenth Amendment." Id. This brought the Supreme Court to the most recent analysis of the Tenth Amendment. The Court declared as follows:

> The Tenth Amendment limits on Congress' authority to regulate state activities are set out in *Garcia v. San Antonio Metropolitan Transit Authority*, 469 U.S. 528 (1985). Garcia holds that the limits are structural, not substantive-i.e., *that States must find their protection from congressional regulation through the national political process*, not through judicially defined spheres of unregulable state activity. *Id*., at 537-554. South Carolina contends that the political process failed here because Congress had no concrete evidence quantifying the tax evasion attributable to unregistered state bonds and relied instead on anecdotal evidence that taxpayers have concealed taxable income using bearer bonds. It also argues that Congress chose an ineffective remedy by requiring registration because most bond sales are handled by brokers who must file information reports regardless of the form of the bond and because beneficial ownership of registered bonds need not necessarily be recorded.
>
> *Although Garcia left open the possibility that some extraordinary defects in the national political process might render congressional regulation of state activities invalid under the Tenth Amendment*, the Court in *Garcia* had no occasion to identify or define the defects that might lead to such invalidation. *See id*., at 556. Nor do we attempt any definitive articulation here. *It suffices to observe that South Carolina has not even alleged that it was deprived of any right to participate in the national political process or that it was singled out in a way that left it politically isolated and powerless*. *Cf. United States v. Carolene Products Co.*, 304 U.S. 144, 152, n.4 (1938).

485 U.S. at 512-512. *South Carolina v. Baker* clearly suggests that the Tenth Amendment is violated when, as here, the substance of the NWPA Amendments Act of 1987, as well as the manner in which the Amendments Act was enacted deprived Nevada of the "right to participate in the national political process" and "that it was singled out in a way that left it politically isolated and powerless." Id.

Prior to the NWPA, states with candidate sites relied primarily upon the defensive maneuvers by powerful congressmen. *See* Appendix pp. 57 to 84. Through the enactment of Section 115 and 116(b) Congress established a method to channel state political objections through a process of Congressional review. That process, subject to a variety of objections in the absence of State consent, at least applied evenly to all potential repository states. The NWPA Amendments Act of 1987, however, limited the states who might prospectively use the statutory veto process to Nevada only. None of the comparative mechanisms of the 1982 law remained to ensure that the state finding itself in the position of the ultimate repository designee got there by other than the exercise of raw political power. Following the Amendments Act, Nevada's ability to offset the political outcome of repository siting through the national political process has been wholly eliminated.

With respect to the 1987 Amendments Act the national political process operated in a defective manner. As indicated in the excerpts of the legislative history (Appendix pp. 57 to 84), Senator Johnston, from Louisiana, a State with a potentially acceptable site,[18] (and, we might add, a statute prohibiting high-level waste disposal, Appendix p. 35) almost single-handedly caused substantive legislation which had neither Senate nor House of Representatives approval to be attached to an appropriation bill, by reference to Committee action only. At a minimum, this represents an example of a failure of the governmental process requiring bicameralism and presentment. During the closed-door sessions of the Conference Committee which met to reconcile differences between alternatives underlying amendments to the NWPA, at which other candidate site states with the exception of Nevada were represented, Nevada was specifically chosen as the only site to be characterized.

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[18] In 1978, Edwin Edwards, Governor of Louisiana, secured from John O'Leary, then Deputy Secretary, Department of Energy, an agreement which stated in pertinent part:

> The Department of Energy will not construct any nuclear waste repository for long-term disposal in Louisiana if the state objects.

On September 5, 1980, Ronald Reagan, campaigning for the presidency, confirmed in a telegram to Louisiana Governor David Treen that the Federal Government would live up to the obligation set forth above. On November 8, 1983, Robert L. Morgan, Acting Director, Office of Civilian Radioactive Waste Management, reaffirmed President Reagan's commitment to Governor Treen. See Appendix pp. 77 to 80.

A popular account of the conference committee action was contained in an article written by Foster Church in the April 1990 issue of Governing. See Appendix at pp. 91 to 96 for a copy of the article. Foster Church wrote:

> For U.S. Representative James Bilbray of Nevada, the cold truth came in a whispered acknowledgment outside a congressional committee room in December 1987.
>
> * * *
>
> "Listen," the man murmured. "I hope you understand what is going on here. There are three sites under review--Texas, Nevada and Washington. And the speaker [of the House, Jim Wright] is a Texan and the majority leader [Tom Foley] is a Washingtonian." He noted the weak status of the small Nevada delegation. Three of the four were in their first terms. Furthermore, none served on the conference committee.
>
> "I hope you understand," he concluded. "It is not going to Washington. And it is not going to Texas." It was a lesson in power politics that Bilbray would not soon forget.
>
> With a speed that surprised even Senate conferees, the House conferees proposed accepting most of the Senate language and taking it a step further. The Nevada site would be chosen by name, and the other two potential sites that had been recommended by the U.S. Department of Energy, Deaf Smith County, Texas, and the Hanford Site in Washington, would be dropped.
>
> * * *
>
> Even Representative Al Swift, a Washington Democrat who served on the conference committee and whose state was protected by the choice of Nevada, recoiled from the naked power play.

> What you are watching is an exercise in pure politics, he told a reporter when the committee adjourned. I am participating in a nonscientific process--sticking it to Nevada. This is as bad a case as I have seen in 10 years in Congress.

The politics of high-level nuclear waste siting have presented many contentious issues and raised new questions concerning cooperative federalism. See Appendix pp. 97 to 100. The prospective facility, thought by all parties to be a noxious interference with the health and safety of their constituents, has been studiously avoided under the rubric, "NIMBYISM." The question arises in the context of the 1987 Amendments Act whether 49 states may, through the misuse of the political process, under the pretext of the Supremacy Clause, avoid a deleterious burden by the simple expedient of identifying and victimizing a single state. The Tenth Amendment must and, indeed, does provide insurance against mob rule in the national political process and against the singling out of a particular state in a way which leaves it politically isolated and powerless. In South Carolina v. Baker, supra, the U.S. Supreme Court suggested that judicial protection is available to any given state from abusive treatment by the other 49 states. It is undoubtedly a defect of the variety contemplated by the U.S. Supreme Court when powerful Senators and Congressmen get together in closed rooms without representation of the state affected and determined that a single-named state must accept a federal program shunned by all. The defect is particularly objectionable when the legislation enacting that action is contained in a bill dealing with budget reconciliation and not with the substantive program itself. Based upon the abuses and defects identified in the governmental process, Nevada's selection should be set aside and Nevada's veto upheld, categorically.

In the context of its 1989 and 1990 Energy and Water Developments appropriations process, Congress has dealt Nevada successive blows in an effort to subdue Nevada's resistance. Congress limited the Secretary's ability to fund Nevada's oversight of the Department of Energy's activities concerning Yucca Mountain and passed additional substantive limitations on Nevada's ability to make itself heard in the national political process. *See* the following documents in the Appendix at pp. 85 to 90: selected pages from H.R. 4567 and Sen. Rep. 100-381, p. 147-149; Appendix pp. 101 to 109: 134 Cong. Rec. S 7779-S 7782, S 7833-S 7834, H 4641-H 4642. In 1989 Congress made Nevada's appropriation a line item budget amount and further restricted the State's oversight. *See* selected pages from HR 2696, Appendix pp. 110 to 113.

This case is the case which illustrates that the majority in *Garcia* was wrong, that the Tenth Amendment protects more than a state's right to participate through its elected representatives in the federal political process. Rather, as the *Garcia* dissenters point out:

> Thus, the harm to the states that results from Federal overreaching under the Commerce Clause is not simply a matter of dollars and cents. *National League of Cities*, 426 U.S. at 846-851. Nor is it a matter of the wisdom or folly of certain policy choices. *Cf*. ante, at 546. Rather by usurping functions traditionally performed by the states, federal overreaching under the Commerce Clause undermines the Constitutionally mandated balance of power between the States and the Federal Government, a balance designed to protect our fundamental liberties.

*Garcia*, *supra*, at 572 (Justices Powell, Rehnquist and O'Connor dissenting).

**e. The Port Preference Clause**

The Port Preference Clause provides that "No Preference shall be given by any Regulation of Commerce or Revenue to the Ports of one State over those of another . . . .". Art. I, § 9, cl 6. The Clause is a limitation on the powers of Congress. Munn v. Illinois, 94 U.S. 113, 135 (1877); Johnson v. Chicago and Pacific Elevator Co., 119 U.S. 388, 400 (1886). The rights of states under the Port Preference Clause are rights unique to statehood, i.e., they are rights which are not possessed by territories which are not yet states. See Alaska v. Troy, 258 U.S. 101, 111 (1922). In this sense, the Port Preference Clause is like the Equal-Footing Doctrine. Although the Clause speaks in terms of a state's "ports", the Clause really relates to the essence of the existence of ports, the state's commerce. See Pennsylvania v. The Wheeling and Belmont Bridge Co., 59 U.S. (18 How.) 421, 435 (1856); South Carolina v. Georgia, 93 U.S. 4 (1876). The Clause limits Congress' power to enact a preference between states with respect to their ports and commerce, rather than between ports themselves. Louisiana Public Service Commission v. Texas & New Orleans Railroad Co., 284 U.S. 125, 131 (1931). The Clause protects the commerce of one state against overreaching and unfair competition in reliance upon discriminatory legislation enacted by Congress. "The purpose of the Port Preference Clause is to prevent Congress from imposing regulations that give certain states a competitive advantage over other states." City of Milwaukee v. Block, 82[illegible] F.2d 1158, 1168 (7th Cir. 1987), citing Pennsylvania v. The Wheeling and Belmont Bridge Co., supra, at 434-35.

The origins of the Port Preference Clause, Art, I, § 9, cl. 6 are linked with the Uniformity Clause, Art. I, § 8, cl. 1. "The two were proposed together and reported out of a special committee as interrelated limitations on the National Government's commerce power." See e.g., United States v. Ptasynski, 462 U.S. 74, 80 n.10 (1983). The Supreme Court in Ptasynski at 81 recognized that:

> There was concern that the National Government would use its power over commerce to the disadvantage of particular States. The Uniformity Clause was proposed as one of several measures designed to limit the exercise of that power. See 2 M. Farrand, supra, at 417-418; Knowlton v. Moore, 178 U.S. 41, 103-106 (1900). As Justice Story explained:
>
> > [The purpose of the Clause] was to cut off all undue preferences of one State over another in the regulation of subjects affecting their common interests . . . . The agriculture, commerce, or manufactures of one State might be built up on the ruins of those of another; and a combination of a few States in Congress might secure a monopoly of certain branches of trade and business to themselves, to the injury, if not to the destruction, of their less favored neighbors. 1 J. Story, Commentaries on the Constitution of the United States § 957 (T. Cooley ed 1873). See also 3 Annals of Cong. 378-379 (1792) (remarks of Hugh Williamson; Address of Luther Martin to the Maryland Legislature [Nov. 29, 1787]) reprinted in 3 M. Farrand, supra, at 205.

When, in 1987, Congress removed all of the comparative mechanisms and objective criteria from the process for selecting a high-level nuclear waste repository, and identified Yucca Mountain in the State of Nevada as the only location to be considered as a prospective repository site, Congress violated the Port Preference Clause.

Congress, at that time, was aware of the stigmatizing effect that nuclear waste disposal would have in any location in the United States. The 1987 Amendments provided for "benefits" payments, 42

U.S.C. 10173(a), as an economic inducement to Nevada to offset the stigmatization. The Amendments also provided for an analysis, to be performed by the Secretary within one year, of the impacts to "tourism and economic development, including the potential loss of revenue and future economic growth." 42 U.S.C. 10174a(b)(13). Congress was aware that no other state wanted this facility because of a universal fear of economic, as well as environmental harm which might ensue from its location. In effect, the NWPA has created a preference for world-wide tourists in states other than Nevada because Nevada will be saddled with a nuclear waste induced stigma if the repository program reaches fruition through the site characterization process. That stigma may dissuade tourists from selecting Las Vegas and cause them to prefer other destinations over Las Vegas.

Tourists enter Las Vegas, the State's largest metropolitan area, predominantly through the McCarren International Airport. The airport is obviously a port. See City of Houston v. FAA, 679 F.2d 1184 (1982) Competing airports for tourists exist in virtually all other states. Congress' action, therefore, violates the Port Preference Clause, and Nevada's selection is either unconstitutional or its veto must be recognized.

### f. The Time Constraints Of Section 115(b) And 116(b) Are Unconstitutional

The legislative history of § 116(b) of the NWPA, 42 U.S.C. 10136(b)[19], which created the state notice of disapproval authority, demonstrated Congress' recognition of a state's constitutional role emanating from the Art. I, § 8, cl. 17 legislative consent requirement and incorporated it in the federal siting scheme. The "State veto," as this provision was dubbed in Congressional consideration, was much debated and was the last issue to be resolved, thereby enabling passage of the NWPA. Alternative approaches offered at various stages of the debate included: state objection valid only when sustained by resolution of one house (128 Cong. Rec. S4334 (April 29, 1982)); state objection valid without Congressional review (128 Cong. Rec. S4258 (April 29, 1982)); and state objection valid unless reversed by resolution of one house (128 Cong. Rec. S4253 (April 29, 1982)). *See generally* 128 Cong. Rec. S15648-53, S15668, H10517-19, H10524 (Dec. 20, 1982) (remarks of Sens. William Proxmire, George

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[19] Section 116(b) of the NWPA, 42 U.S.C. § 10136(b) states:
116(b) STATE PARTICIPATION IN REPOSITORY SITING DECISIONS.
(1) Unless otherwise provided by State law, the Governor or legislature of each State shall have authority to submit a notice

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of disapproval to the Congress under paragraph (2). In any case in which State law provides for submission of any such notice of disapproval by any other person or entity, any reference in this subtitle to the Governor or legislature of such State shall be considered to refer instead to such other person or entity.

(2) Upon the submission by the President to the Congress of a recommendation of a site for a repository the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval. Such Governor or legislature may submit such notice of disapproval to the Congress not later than the 60 days after the date that the President recommends such site to the Congress under section 114. A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate. Such notice of disapproval shall be accompanied by a statement of reasons explaining why such Governor or legislature disapproved the recommended repository site involved.

(3) The authority of the Governor or legislature of each State under this subsection shall not be applicable with respect to any site located on a reservation.

Mitchell, John Stennis, Pete Domenici, John Glenn, Robert Kasten, and Strom Thurmond and Reps. James Broyhill, Joe Moakley, Tom Corcoran, and John Dingell). For an analysis of state participation issues in the 96th Congress, see Frankel, Nuclear Waste Management, 8 Ecology L.Q. 790-800 (1980).

Congress established a statutory framework within which states could disapprove, and, therefore, veto, the federal government's high-level nuclear waste repository program. Section 116(b)(1) of the NWPA provides:

> Unless otherwise provided by State law, the Governor or legislature of each state shall have authority to submit a notice of disapproval to the Congress . . . .

This language does not constitute a divestiture of state constitutional power as discussed in preceding sections of this brief, but, rather, a recognition of it.

The Secretary does not question Nevada's power to submit a notice of disapproval pursuant to Section 116(b) of the Act. See AR 7, paragraph 16, p. 8; ER 42. His only disagreement has to do with timing. Paragraph 45 of the Complaint in United States v. Nevada, supra (AR 7 at p. 17; ER 51) states in this regard:

> 45. Therefore, plaintiff is entitled to a declaration that Nevada's purported submission of AJR 4 and 6 to the Congress of the United States on April 19, 1989, before the President has made any recommendation, was premature and did not effect a valid and effective notice of disapproval pursuant to section 116(b)(2) of the Act, 42 U.S.C. § 10136(b)(2) (1982).

The Secretary has arbitrarily rejected the Nevada Attorney General's analysis of the timing problem contained in the Attorney General's Opinion attached to the Complaint in United States v. Nevada, supra, AR 7. The Nevada Attorney General opined at p. 8 (ER 63):

> The threshold question which we must address is whether a notice of disapproval transmitted by the Governor and the Legislature to the Congress is valid and effective if submitted before the President has recommended Yucca Mountain to the Congress. For the reasons discussed below we answer this question in the affirmative.

The State continues to rely upon the legal analysis presented in the November 1, 1989 opinion of the Nevada Attorney General (hereinafter, the AGO). ER 56 to 76. We offer the following additional arguments specifically addressing the timing issue to supplement rather than supplant what was written in the opinion.

Section 116(b)(2) provides that the ". . . Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval." This section must be read in pari materia with Section 115(b) which reads:

> The designation of a site as suitable for application for a construction authorization for a repository shall be effective at the end of the 60-day period beginning on the date that the President recommends such site to the Congress under section 114, unless the Governor and legislature of the State in which such site is located, or the governing body of an Indian tribe on whose reservation such site is located, as the case may be, has submitted to the Congress a notice of disapproval under section 116 or 118. If any such notice of disapproval has been submitted, the designation of such site shall not be effective except as provided under subsection (c). (emphasis added).

Section 116(b)(2) speaks in terms of "Governor or Legislature" while Section 115(b) speaks in terms of "Governor and Legislature". The disjunctive and conjunctive present an ambiguity which must be reconciled in avoidance of a serious constitutional problem attending the 60-day window.

It is a fact based upon simple probability that the 60-day window following the President's recommendation is more likely to fall within a period when the Nevada Legislature is out of session than when it is in session. This is because the Nevada Legislature meets only on a biennial basis for approximately five to six months. See Nev. Const., Art. 4, § 2. If the 60-day window should fall at a time when the Legislature is not in regular session, a special session at the Governor's prerogative would be required. See Nev. Const., Art. 5, § 9. If the Legislature should happen to disagree with the Governor's views concerning the repository, the Governor could simply refuse to call the special session. Unless the first six words of Section 116(b), "Unless otherwise provided by State law," is construed to permit the timing of the Governor's and the Legislature's action to be determined by State law, the Secretary of Energy and the President are in the position to time the recommendation of Yucca Mountain to deprive the Legislature of an opportunity to participate in the notice of disapproval process. Unless Section 116(b) is construed to permit a notice of disapproval in advance of the President's recommendation, the citizens of the State of Nevada would be deprived of the "Republican Form of Government" guaranteed in the Guarantee Clause, Art. IV, § 4, of the Constitution[20] because their representatives in the Legislature may be deprived of the opportunity to vote on the measure at the Governor's option. See Garcia, supra, at 556; see also Morgan v. South Bend Community School Corp., 797 F.2d 471-477 (7th Cir 1986). (Congress may not "decide who within a state's government has the authority to act on behalf of government"); Bradley v. School

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[20] Art. IV, § 4 states in pertinent part:

> The United States shall guarantee to every State in this Union a Republican Form of Government, . . . .

Bd., 462 F.2d 1058, 1068 (4th Cir. 1972) (One of the powers . . . reserved to the states [by the Tenth Amendment] is the power to structure their internal government."), affirmed by an equally divided Court, 412 U.S. 92, 93 (1973); United States v. Mandel, 415 F. Supp. 1025, 1031 (D. Md. 1976) ("Nor can it be doubted that the states under our federal scheme have, within broad constitutional limits, the exclusive power to allocate the functions of the executive, judicial, and legislative powers as they wish."); see also United States v. Downy, 195 F. Supp. 581 (S.D. Ill. 1961); Cintron-Garcia v. Romero-Borcelo, 671 F.2d 1 (1st Cir. 1982); Merritt, The Guarantee Clause And State Autonomy: Federalism For A Third Century, 88 Colum. L. Rev. 1, 23-29, 40-50 (1988).

If Section 115(b) and 116(b) can be harmonized so as to avoid the constitutional problem arising from the timing of Nevada's regular legislative sessions, without violating Congress' intent, it should be done.[21] Fortunately, there is a way to do this.

The Section 115(b) requirement for both the Governor and the Legislature to submit a notice of disapproval must be given effect. To both the Governor and Legislature to address a notice of disapproval the time for submission of the notice of disapproval must not be restricted by the 60-day window in Section 116(b). The "Unless otherwise provided by state law" language of Section 116(b)(1) must be given effect to permit the accommodation of the biennial Nevada legislative sessions with the notice of disapproval procedure as discussed in the AGO. Nevada's notice of disapproval was not invalid because it preceded the commencement of the 60-day window.

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[21] As a corollary of the presumption favoring constitutionality, the fact that one among alternative constructions would involve serious constitutional difficulties is reason to reject that interpretation in favor of another. Sutherland Stat. Const. § 45.11 (4th ed.). In DeBartolo Corp. v. Fla. Gulf Const. Trades Council, 485 U.S. 568, 575 (1988) the Supreme Court stated:

> Another rule of statutory construction, however, is pertinent here: where an otherwise acceptable construction of a statute would raise serious constitutional problems, the Court will construe the statute to avoid such problems unless such construction is plainly contrary to the intent of Congress.

### B. Nevada Submitted a Valid and Effective Notice of Disapproval Pursuant to Section 116(b), 42 U.S.C. 10136(b)

Assuming for the sake of argument only that Congress may constitutionally define and limit how a state legislative veto may be expressed, Nevada nevertheless submitted an effective notice of disapproval under Section 116(b), 42 U.S.C. 10136(b).

The first six words of Section 116(b)(1), "Unless otherwise provided by State law," condition the State's compliance with the procedure set forth in paragraph (2) of Section 116(b). The AGO has identified "State law" provisions which must be read in pari materia with paragraph (2). Giving State law due effect, the procedure for expression of Nevada's objection demonstrates a basis for an early submission of the State's notice of disapproval. ER 63 to 74.

The first sentence of paragraph (2) states that "Upon submission by the President to the Congress of a recommendation of a site for a repository, the Governor or Legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval." The first part of the first sentence, the Secretary maintains, prohibits Nevada from submitting its notice prior to the President's recommendation.[22]

Beyond the first sentence, there is nothing else in Paragraph (2) which would suggest that Nevada's notice of disapproval was premature. The second sentence, for instance, states that "Such Governor or Legislature may submit such notice of disapproval to the Congress not later than the 60 days after the date the President recommends such site to the Congress under Section 114." Nevada's submission of its notice of disapproval when it did is, obviously, in compliance with the second sentence.

A detailed analysis of Section 114 in relation to Section 116(b) supports the conclusion that Nevada submitted a valid and effective notice of disapproval. Both the Secretary's recommendation to the President "that the President approve such site for development of a repository" (Section 114(a)(1)) and the President's recommendation to Congress that he "considers the Yucca Mountain site qualified for application for a construction authorization for a repository" (Section 114(a)(2)(A)) require State legislative action in terms of the Legislature's decision whether or not to approve a cession of jurisdiction in advance of the recommendations. It is only State legislative consent which will satisfy the Nuclear Regulatory Commission's licensing requirement in 10 C.F.R. 60.121 that the DOE has the necessary jurisdiction and control over the site. _All_ of the requirements of 10 C.F.R. Part 60 must be met for the President's determination to be made. Otherwise, the DOE's application for a construction application will be deemed incomplete by the NRC staff. In short, a legislative cession of jurisdiction is a prerequisite to the Secretary's and the President's recommendations that the site is qualified for a construction authorization. Neither the Secretary nor the President can make a recommendation without the Nevada Legislature's approval. Because NRS 328.075 requires the cession of jurisdiction to be accomplished in _regular_ session, the time for commencement of the 60-day window cannot be given effect.

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[22] Paragraph (2) was not amended at the time of the 1987 amendments to the NWPA which limited site characterization to Yucca Mountain. When there were three sites undergoing site characterization, the Secretary could have recommended only one site to the President as provided in the former text of Section 114. See copy of former Section 114 in the Addendum. Former Section 114(a)(2)(A) provided in part:

> Not later than March 31, 1987, the President shall submit to the Congress a recommendation of one site from the three sites initially characterized that the President considers qualified for application for a construction authorization for a repository.

Until the President made his recommendation there was no site designation as to any one of the three sites and no jeopardy attached to any site. It would have been premature for any of the three States that had candidate site to have issued a notice of disapproval and challengeable on ripeness grounds. Yucca Mountain was designated by Congress itself by the 1987 amendments and, therefore, there was a repeal by implication of any necessity to await a pro forma recommendation by the President. At that time, jeopardy immediately attached to Yucca Mountain and the question of the State's approval or disapproval was ripe. The Secretary acknowledges this fact. He stated in testimony under oath on April 23, 1990 in Testimony before The House of Representatives Subcommittee On Energy and Power, "Congress has legislated that it [high-level radioactive waste] will go there [Yucca Mountain]." He perceives his task simply as a ministerial task of fulfilling Congress' edict.

In actual fact, the Nevada Legislature has addressed the question of a cession of jurisdiction in the first regular session following the 1987 Amendments Act on the assumption that the selection of Yucca Mountain was a _de facto_ application for a cession of jurisdiction. As the Nevada Legislature has already denied a cession of jurisdiction and expressed its disapproval in an appropriate notice the Secretary should have recognized the implication of that fact and reported to Congress for further legislative authorization under Section 113(c)(3)(F).

### C. The Yucca Mountain Site Is Statutorily Disapproved And Constitutionally precluded From Development As A Repository

#### 1. The Yucca Mountain Site Is Statutorily Disapproved

Section 116(b)(2) of the NWPA provides that "A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate." The Secretary acknowledges that "On April 19, 1989, copies of both resolutions [AJR 4 and AJR 6] were sent to the United States House of Representatives." AR 7 at paragraph 36, p. 14; ER 48. In fact, they were sent to the Senate and the President, as well. On April 19, 1989, Mouryne B. Landing, Chief Clerk of the Assembly of the State of Nevada, transmitted copies of AJR 4 and AJR 6, by United States mail,[23] to the President of the United States, the Vice President of the United States as the presiding officer of the Senate, the Speaker of the House of Representatives and to each member of the Nevada Congressional Delegation. See Appendix pp. 114 to 117.

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[23] In Nevada a statute, NRS 47.250(13), provides for a disputable presumption that a letter duly directed and mailed was received in the regular course of mail. If the fact of mailing is established, the presumption of receipt arises. See e.g., Rivera v. American Nat'l. Property & Casualty, 105 Nev. Ad. Op. 133 (November 27, 1989). This is the federal common law as well.

Section 115(c)(d) and (e) establish the procedures which Congress imposed upon itself when a notice of disapproval is submitted to it. Section 115(c) provides in this regard:

> (c) CONGRESSIONAL REVIEWS OF PETITIONS.--If any notice of disapproval of a repository site designation has been submitted to the Congress under Section 116 or 118 after a recommendation for approval of such site is made by the President under Section 114, such site shall be disapproved unless, during the first period of 90 calendar days of continuous session of the Congress after the date of the receipt by the Congress of such notice of disapproval, the Congress passes a resolution of repository siting approval in accordance with this subsection approving such site, and such resolution thereafter becomes law.

It is clear that 90 calendar days of continuous session have elapsed [illegible] April 19, 1989. See e.g., Section 115(f), 42 U.S.C. 10135(f). Neither the Senate nor the House of Representatives has addressed a resolution of repository siting approval as required by the procedures in Section 115(c) and (d). Public officials of the State of Nevada have justifiably relied upon a claim that the Yucca Mountain site is disapproved by Congress and shall not be considered for development as a repository. The Secretary acknowledges that:

> Section 115(c) of the Act, 42 U.S.C. § 10135(c) (1982), provides that in the event Congress fails to pass a resolution approving a site within 90 days after a state submits a notice of disapproval of a repository site designation, the disapproval shall be effective.

AR [illegible], paragraph 47, p. 17; ER 51. The Secretary contends, however, that the notice of disapproval was not valid and effective and, therefore, "Congress was not required to act on the notice within the time periods specified in NWPA section 115(c)." Id. paragraph 48, p. 18; ER 52. We have addressed the validity of the notice of disapproval in preceding sections of this brief. The Secretary's contention may be condensed to a simple premise: The notice was premature, therefore, Congress was not required to act. In fact, however, Congress did act, albeit it was a negative act, one of two options available to it in Section 115(c). "[S]ilence is sometimes most expressive." *Chisholm v. Georgia*, 2 U.S. (2 Dall.) 419, 454 (1793) (opinion of Wilson J.). Congress' failure to pass a resolution of repository siting is a political choice committed solely to Congress' discretion by the Act. It is , in effect, a political question committed to a coordinate branch of the federal government which is not justiciable. *See* *e.g.*, *Baker v. Carr*, 369 U.S. 186, 217 (1962). The Secretary's opinion on the Congress' inaction is immaterial. We submit that neither the Secretary nor this Court should try to second guess Congress' choice. Based upon the health and safety, socioeconomic and environmental endangerment reasons which were cited in support of the notice of disapproval, Congress was well within its province and, furthermore, well advised, to let the notice of disapproval stand.

If, as the AGO recognized, the statement of reasons had merely cited technological factors involving suitability of the site to contain the radioactive waste, a different question would have been presented. The question of technical disqualification must first be addressed by the Secretary under his Section 113(c)(3) authority which is the subject of Nevada's Second Cause of Action. *See* pp. 59 to 75, *infra*.

## SECOND CAUSE OF ACTION

### D. The Secretary Was Required To Determine That The Site Is Unsuitable For Development As A Repository Based Upon: 1) Nevada's Veto And Notice Of Disapproval And 2) Technical Disqualifying Factors Identified By The State Of Nevada In The Governor's Letter Dated November 14, 1989

The second cause of action raised in the petition is stated in the Docketing Statement as:

> Whether the Respondent Secretary abused his discretion by failing to determine that the site is unsuitable for repository development pursuant to 42 U.S.C. 10133(c)(3) and the Department of Energy guidelines contained in 10 C.F.R. Part 960.

Based upon the State's veto and notice of disapproval he should have determined that the Yucca Mountain site was unsuitable for development as a repository under Section 113(c)(3), 42 U.S.C. 10133(c)(3). We have presented at length the constitutional underpinnings of Nevada's veto of the selection of the Yucca Mountain site for development of a high-level nuclear waste repository. The Secretary has the responsibility, in the first instance, for interpreting and applying the Constitution as a limitation to his own duties and actions. see e.g., Freund, Umpiring The Federal System, 54 Colum. L.Rev. 545, 546 (1954). The Secretary is prohibited from violating Nevada's constitutional rights in administering his duty under the NWPA. See e.g., Norton v. Shelby County, 118 U.S. 425, 442 (1886).

**If we accept the notion, as we must, that Nevada has a constitutional right to veto the location of the repository at Yucca Mountain, the time constraints imposed by Section 116(b) are immaterial. Furthermore, if Nevada is right as to constitutional contentions presented, Nevada's notice of disapproval is not premature**

and the AJR 4 and AJR 6 resolves disqualify the site under Section 115 of the Act. The Secretary's failure to recognize the unsuitability of the Yucca Mountain site on either basis pursuant to his obligation to do so under Section 113(c)(3) is arbitrary and capricious.[24] The primary basis for Nevada's veto and notice of disapproval is economic and environmental endangerment. The Secretary has improperly removed himself from any consideration of the socioeconomic considerations which are of concern to the State. In the Section-by-Section Analysis of the siting guidelines in 10 C.F.R. Part 960, the following statement appears:

> The DOE recognizes that the risk of new technologies involving hazardous materials may be perceived to be greater by the general public than it is by technical experts . . . . Perceived risk, however, is not an appropriate topic for general repository-siting guidelines; . . . .

[illegible] 47747. A DOE document published in April 1990 entitled, Yucca Mountain Project Socioeconomic Plan: Scientific Investigations Phase (Consultation Draft YMP/90-40) states as follows at p. 1-2:

> The Socioeconomic Plan does not currently include any primary research and analysis of the potential loss of revenue and future economic growth due to the stigma effects of perceptions of risk that may be associated with the Yucca Mountain Project.

See Appendix pp. 118 to 120. The foregoing passage demonstrates that the Secretary has intractably adhered to the arbitrary position set forth initially in the supporting materials published with the siting guidelines. Had he been receptive to the evidence, he would have disqualified the site; his failure to do so is arbitrary, capricious and an abuse of discretion.

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[24] 3. Paragraph 2.3 of Nevada's Petition For Judicial Review states in this regard:

> 2.3 The State of Nevada's opposition to the proposed repository, evidenced by its legislative and gubernatorial submittal of a notice of disapproval, is a further disqualifying factor rendering the Yucca Mountain site unsuitable for development as a repository.

The Congress, as part of its findings in Section 111(a)(6), 42 U.S.C. 10131(a)(6), found that:

> State and public participation in the planning and development of repositories is essential in order to promote public confidence in the safety of disposal of such waste and spent fuel; . . . .

Because the State of Nevada has objected to the repository and submitted its notice of disapproval it is impossible for the goal of public confidence in Nevada to be achieved at Yucca Mountain. An adverse condition relative to public confidence presently exists which will require measures beyond that which is reasonably available to correct and as a result causes disqualification. See e.g., Supp. Info., 10 C.F.R. 960, 49 F.R. 47724; note, all references to 49 F.R. 47714 et seq. are in the Appendix pp. 126 to 134; see also Appendix pp. 121 to 125, for a recent article in the May 8, 1990 issue of Radioactive Exchange for a report dealing with public confidence and socioeconomics in the proceeding of the HLW International Conference in Las Vegas, Nevada on April 8 to 12, 1990. The Secretary's failure to recognize the adverse condition of "no public confidence" is arbitrary, capricious and an abuse of discretion.

### 1. The Secretary Has A Duty To Disqualify The Yucca Mountain Site From Consideration As Soon As Disqualifying Conditions Are Known To Exist.

The Secretary has an obligation, under both the NWPA, as amended, and his own guidelines adopted pursuant to that Act, to end all site characterization activities at Yucca Mountain if at any time he determines, in the exercise of prudence and after applying requisite conservative assumptions, that the site is unsuitable for development as a repository. The meaning of unsuitability in this context includes the presence or likely presence of any disqualifying condition. See Appendix III, 10 C.F.R. 960, 49 F.R. 47767.

Section 113(c)(3) of the NWPA, 42 U.S.C. 10133(c)(3), provides, in part, as follows:

> If the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall--
>
> (A) terminate all site characterization activities at such site;
>
> (B) notify the Congress, the Governor and the legislature of Nevada of such termination and the reasons for such termination;
>
> (C) * * *
>
> (D) take reasonable and necessary steps to reclaim the site and to mitigate any significant adverse environmental impacts caused by site characterization activities at such site;
>
> (E) * * *
>
> (F) report to Congress not later than 6 months after such determination the Secretary's recommendations for further action to assure the safe, permanent disposal of spent nuclear fuel and high-level radioactive waste, including the need for new Legislative authority.

Section 113(c)(3), of the NWPA must be read in pari materia with the requirement in section 112(a), 42 U.S.C. 10132(a), of the NWPA [illegible] the Secretary:

> . . . shall issue general guidelines for the recommendation of sites for repositories. Such guidelines shall specify detailed geologic considerations that shall be primary criteria for the selection of sites in various geologic media. Such guidelines shall specify factors that qualify or disqualify any site from development as a repository, . . . . (emphasis supplied).

The guidelines required by section 112(a) were promulgated by the Secretary as 10 C.F.R. Part 960, on January 7, 1985. They contain various qualifying, disqualifying, favorable and potentially adverse conditions. The guidelines also contain, as good science and prudence would require, a significant constraint on the Secretary's handling of the scientific information developed in the course of the siting process. That is, conservative assumptions must be made throughout the process.[25]

The guidelines include preclosure and postclosure topical technical guidelines, all of which include qualifying conditions. Most, but not all, of the technical guidelines also include disqualifying conditions.

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[25] 10 C.F.R. 960.3-1-4-2, which is part of the section headed *EVIDENCE FOR SITING DECISIONS*, provides, in part, as follows:

> In developing the above-mentioned basis for evaluation, as may be necessary, assumptions that approximate the characteristics or conditions considered to exist at a site, or expected to exist or occur in the future, may be used. *These assumptions will be realistic but conservative enough to underestimate the potential for a site to meet the qualifying condition of a guideline; that is, the use of such assumption should not lead to an exaggeration of the ability of the site to meet the qualifying condition*. (emphasis supplied).

The foregoing provision is explained in the Supplementary Information to the guidelines, at 49 F.R. 47728 as follows:

> Included in the provision for evidence is a discussion about the use of assumptions. Before site characterization is completed, preliminary assessments of the potential of the site to meet the qualifying conditions must necessarily employ judicious assumptions where definitive data are missing. Many commentors were concerned that consistent optimism in such assumptions would create benefits out of deficiencies in the scope of field testing and research undertaken by the DOE. Accordingly, section 960.3-1-4 only allows the use of assumptions *that would tend to underestimate the ability of the site to meet the qualifying conditions. Such assumptions are commonly termed "conservative" because they are chosen in order to minimize the possibility that later findings will prove the assumptions to be wrong. This is a commonly used approach in engineering and in scientific predictions.* (emphasis supplied).

It is important to note the distinction between the qualifying and disqualifying conditions in the guidelines. The basis of the Qualifying Conditions is compliance with the system guidelines, which themselves are based on an evaluation of total, or overall, waste isolation system performance as required by the Nuclear Regulatory Commission's licensing regulations in 10 C.F.R. Part 60 and the Environmental Protection Agency's standards in 40 C.F.R. Part 191. These conditions can only be met through compliance with total system performance requirements found in the system guidelines, which require extensive data and extremely sophisticated mathematical performance analyses. The Disqualifying Conditions, on the other hand, are based upon evaluations of specific conditions observed at the site with respect to geohydrology, geology, tectonics, natural resources, etc. These evaluations do not rely on total system performance projections. Instead, they address the question of whether a specific natural characteristic or condition of the site will, or is likely to be so fundamentally detrimental to waste isolation as to constitute a fatal flaw. This determination can be made at any time there is sufficient information on specific conditions or characteristics of the site to support the required finding, and, as DOE acknowledges in the guidelines preamble, "may be verifiable at a site without extensive data gathering or complex analysis . . . ." 49 FR 47724. (emphasis supplied).[26]

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[26] An example of the difference in standards between Qualifying Conditions and Disqualifying Conditions is found in the Postclosure Guidelines for Geohydrology (10 C.F.R. Part 960.4-2-1). The Disqualifying Condition states: "A site shall be disqualified if the pre-waste-emplacement ground-water travel time from the disturbed zone

Because of the extremely large uncertainties involved in making predictions about the performance of natural geologic and hydrologic properties of the earth over extremely long periods of time, and the incomplete understanding of the nature of many of the natural processes affecting a repository (for example, the science of modeling groundwater flow in what is called the unsaturated zone is virtually in its infancy), Congress required (42 U.S.C. 10132) that the Department of Energy, with the concurrence of the Nuclear Regulatory Commission, formulate certain clear signs to indicate when further investigation into a potential repository site is not warranted. They are, or at least they are meant to be, clear indications, based upon certain conditions known or likely to exist at the site, that the kind of confidence necessary to develop it as a repository can never be achieved. Thus, as the clearest example, the DOE, with concurrence of the NRC, in its guidelines, said, in effect, it doesn't matter how good things might look in a mathematical model of the site's predicted performance, if the ground-water is expected to travel from the disturbed zoned to the accessible environment along any pathway of significant radionuclide travel in less than one thousand years the site should be disqualified. See 10 C.F.R. 60.113(a)(2); 10 C.F.R.

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to the accessible environment is expected to be less than 1,000 years along any pathway of likely and significant radionuclide travel."

The corresponding Qualifying Condition states: "The present and expected geohydrologic setting of a site shall be compatible with waste containment and isolation. The geohydrologic setting, considering the characteristics of and the processes operating within the geologic setting, shall permit compliance with (1) the requirements specified in 960.4-1 [Postclosure System Guideline] for radionuclide releases to the accessible environment and (2) the requirements specified in [NRC licensing rule] 10 C.F.R. 60.113 for radionuclide releases from the engineered-barrier system using reasonably available technology."

960.4-2-1(d). The NRC concurred in the DOE guidelines for site disqualification because they are not inconsistent with NRC repository system licensing regulations and are responsive to the NWPA mandate to identify factors which would disqualify potential repository sites.

The implementation guidelines, describing the basis for site evaluations (10 C.F.R. 960.3-1-5) clarify the difference in standards which must be applied in determining whether a site is qualified or disqualified, and make clear that a site is subject to disqualification *at any time* during the DOE's repository siting process. This section states:

> For purposes of recommending sites for development as repositories, such evidence shall include analysis of expected repository performance to assess the likelihood of demonstrating compliance with 40 CFR Part 191 and 10 CFR Part 60, in accordance with 960.4-1 [the postclosure system guideline]. A site shall be disqualified *any time during the siting process if the evidence supports a finding by the DOE that the disqualifying condition exists* or the qualifying condition of any system or any technical guideline cannot be met. (emphasis supplied).

It is thus clear that under section 113(c)(3), section 112(a) and the Secretary's guidelines in 10 C.F.R. Part 960, the Secretary has a continuing obligation to be vigilant for any information which would indicate that the site is unsuitable for development as a repository. Failure to meet total system performance standards and thus the qualifying conditions of the guidelines *or* the presence, or expected presence, of *any* disqualifying condition should trigger an unsuitability determination. The early and ongoing, systematic collection and thorough evaluation of data to see if *any* disqualifying conditions exist or are likely to exist, is a necessary prerequisite to avoid arbitrariness. That is the crux of the problem.

### 2. The Secretary Has Not Established Sufficient Procedural And Analytical Processes To Disqualify Yucca Mountain On The Basis Of Currently Known Conditions At The Site

DOE must have a methodology, some formalized system of data collection, evaluation and decision making, to determine, *early and throughout* the process, whether or not *any* Disqualifying Conditions exist, and if so, for making the required decision to terminate work at the site *whenever* such a condition is found. In its implementation of the repository program, the DOE, as recently acknowledged by the new Director of the Office of Civilian Radioactive Waste Management (OCRWM), has never had such a methodology, nor has the Secretary's recent reassessment and restructuring of the program adopted one. *See* p. 72, *infra*. In enacting the NWPA, Congress clearly intended that the guidelines themselves be the basis of that methodology, and that a formalized procedure for *early and continuing* determination of disqualification be implemented. If the guidelines are applied now as intended by Congress, and as required by the force of their own provisions, the result is disqualification based upon a determination of unsuitability by the Secretary according to his duty in Section 113(c)(3) to reach such a determination, as Nevada's Governor pointed out to the Secretary on November 14, 1989. ER 1 to 4. This will be further discussed in Section E. 3., *infra*. Nevada's Second Cause of Action is not limited to the Secretary's failure to determine the Yucca Mountain site is unsuitable. The State submits that the Secretary's refusal to implement a program which would permit him to evaluate the site for Disqualifying Conditions is arbitrary, capricious and not in accord with his duty under the NWPA.

Notwithstanding the requirements and intent of the NWPA and the DOE guidelines, the DOE's complex plans for site investigations (site characterization) and DOE's identification of "decision points" in its Site Characterization Plan ignore the need for early and ongoing evaluation of specific site data relative to the Disqualifying Conditions of the guidelines. This is contrary to the approach in the Supplementary Information accompanying DOE's guidelines (49 F.R. 47722) which states: "The site-characterization plans to be prepared before sinking exploratory shafts at candidate sites will identify site-specific issues, derived from the guidelines, that affect the suitability of each site for development as a repository." Instead, the Site Characterization Plan is focused on "Key Issues", as defined and described in the DOE's September 1986 _Issues Hierarchy for a Mined Geologic Disposal System_, DOE/RW-0101. _See_ Appendix pp. 135 to 164. Issues are meant by DOE, in the document and throughout its Site Characterization Plan approach to site suitability evaluations, to be _unresolved questions related to performance_ rather than the issues associated with specific existing natural site characteristics suggestive of the disqualification of the site for the development of a repository. _See_ 1985 Mission Plan, p. 163 included in the Appendix at p. 166.

The Issue Resolution Strategy (Fig. 5, at page 24) of the Issues Hierarchy (_See_ Appendix p. 163) makes clear that the DOE intends that all repository system performance issues are to be resolved prior to any evaluation (higher level findings) of specific site characteristics relative to the Disqualifying Conditions of 10 C.F.R.

Part 960. This is further confirmed in the 1988 Site Characterization Plan in Table 8.5-3, Major Decision Points in the Site Characterization Program, at pages 8.5-107, 108. _See_ Appendix at pp. 165 to 171. This table establishes the sequence of planned decisions to be made during the site characterization process. The final four (of 18) identified decision points which precede the Secretary's recommendation of the site to the President as being suitable for development of a repository are depicted (ER 170) as follows:

> * Are site information and technical data sufficient for [overall system waste isolation] performance assessment?
>
> * Is all technical information adequate to issue DEIS [Draft Environmental Impact Statement for site recommendation decision]?
>
> * _Is all technical information sufficient to support higher level findings on DOE siting guidelines_? (emphasis added).
>
> * Is all technical information sufficient for LA [NRC License Application pursuant to 10 C.F.R. Part 60]?

This sequential list of major decision points exhibits the DOE's presumption that the site is suitable for repository development, and in so doing it places the higher level finding that the site meets the DOE's Qualifying Conditions of the guidelines in a _pro forma_ position as the next-to-last decision prior to the Secretary's recommendation of the site to the President rather than in a functional position as the first and continuing decision point in the methodology. What is missing, and obviously ignored, is the mandate of the statute and the guidelines to continually evaluate the site data against the Disqualifying Conditions of the guidelines. Such an evaluation would require a formalized decision process whereby the finding can be made at any point in time prior to completion of site characterization that the site is disqualified if Disqualifying Conditions are present, or likely to be present.

The DOE has recently announced major revisions in various aspects of its high-level nuclear waste repository program that are significant to the question of whether it intends to make early and ongoing evaluations of the natural geohydrologic characteristics of the site relative to the Disqualifying Conditions of the 10 C.F.R. Part 960 guidelines for site recommendation.

The most prominent of the announcements is the Secretary's November 1989 Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program. AR 2; Appendix pp. 172 to 202. In his report the Secretary determined, at page vii (ER 177), that the program "cannot be effectively executed in its current form." He then broadly outlined a restructuring of the Yucca Mountain program that would result in the commencement of a surface-based field testing program of the existing geohydrologic characteristics in early 1991, to be followed by a start of the exploratory shaft facility for underground in situ testing in late 1992. AR 2 at p. 10; Appendix at p. 190. The previous schedule called for both activities to proceed essentially simultaneously.

The language of the Secretary's report suggests that there will be no early surface based investigation of whether there are any 10 C.F.R. Part 960 Disqualifying Conditions present at the site.[27] In

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[27] The Secretary's report, AR 2 at page 14, Appendix p. 194, states:

> [I]n its near-term scientific investigations of the Yucca Mountain candidate site, the DOE has decided to focus on surface-based testing aimed specifically at evaluating whether the site has any features that would indicate that it is not suitable as a

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fact, this is not the intent but rather an obfuscation which hides a different intent, if the DOE's singular meaning of certain words and phrases, is understood.

The meaning of the Secretary's phrase "evaluate key suitability issues" only becomes apparent in the context of the Issues Hierarchy discussed above, particularly, Key Issues. Key Issues are based upon the total waste isolation system performance, not the Disqualifying Conditions associated with specific geohydrologic conditions of the site in 10 C.F.R. Part 960. See Appendix pp. 144 to 158.

The "focus on potentially adverse conditions", likewise, does not address whether any of the 10 C.F.R. Part 960 Disqualifying Conditions exist at the site. Instead, it only becomes clear from a DOE guidance memo (Lake Barrett to Carl Gertz, Yucca Mountain Project Director, October 31, 1989, Appendix pp. 203 to 211) regarding surface-based test prioritization that the "new program" will focus (sec. 3.1, at page 2, Appendix p. 206) entirely on potentially adverse conditions under the NRC repository system licensing regulations (10 C.F.R. Part 60) which contain no explicit disqualifiers, and not on Disqualifying Conditions under the Department's own guidelines. Most tellingly, the memo describes a limited purpose of early testing as follows: "the surface-based testing program will serve to support the decision to proceed with underground work, but will not constitute any

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potential repository site . . . . This approach is in concert with a number of suggestions . . . that scientific investigation activities focus on potentially adverse conditions and that efforts be made to evaluate key suitability issues early in the process.

establishment of prerequisites for such underground work." Id., section 2.3, page 2, Appendix at p. 206. (emphasis supplied).

A March 6, 1990 letter from John Bartlett, then Director Designate (now confirmed Director) of the DOE OCRWM, to Nevada Senators Richard Bryan and Harry Reid provides additional confirmation that there is no current DOE plan to have an early and ongoing evaluation of the site relative to the Disqualifying Conditions of the 10 C.F.R. Part 960 guidelines. In response to the Senators' February 2, 1990 question (No. 6) regarding whether the DOE plans to "periodically compare existing data with the technical siting guidelines to develop a series of "go or no-go milestones", Mr. Bartlett stated, "A decision methodology for evaluating site suitability does not exist . . . ." See Appendix at pp. 212 to 216.

It is interesting to note that aside from the obvious admission in this response, Mr. Bartlett has ignored the matter of the technical guidelines and their Disqualifying Conditions and speaks only to site suitability, which DOE has defined to mean acceptable total waste isolation system performance. See paragraph 4.1 of Lake Barrett's memorandum to Carl Gertz, supra, Appendix at p. 208.

### 3. The Secretary Is Currently In Possession Of Evidence And Has Awareness Of Disqualifying Conditions At Yucca Mountain But Has Not Acted To Disqualify The Site

The Second Cause of Action stated in the petition is grounded upon Nevada's belief that sufficient information now exists to compel the conclusion that Yucca Mountain, because of the presence of at least four Disqualifying Conditions, is unsuitable for development as a repository, and thus to invoke the provisions of section 113(c)(3) of the NWPA. By ignoring the statutory requirement to terminate work on the site if *at any time* he determines Yucca Mountain to be unsuitable, Nevada submits that the Secretary has abused his discretion. He has also done so by ignoring clear evidence available to him which shows the presence of Disqualifying Conditions at the site.

The State has directed the Secretary's attention to certain evidence in the November 14, 1989 letter, with attachments, from Governor Miller to Secretary Watkins which demonstrates disqualification. *See* Excerpt of Record at pp. 5 to 28. The information and evidence cited by Governor Miller, unless otherwise identified in his statement, is found in State of Nevada Comments on the U.S. Department of Energy Site Characterization Plan, Yucca Mountain Site, Nevada. *See* Appendix at pp. 217 to 240 for excerpts of comments; *see also* Nevada's comments to the DOE's Draft Environmental Assessment, Volume II, DRI pp. 36-39, Appendix at pp. 241 to 246.

On March 1, 1990, Secretary Watkins wrote to Senator J. Bennett Johnston, Chairman of the Senate Committee on Energy and Natural Resources. The letter and its enclosure are included in the Appendix at pp. 1 to 9. In the letter, the Secretary acknowledges that over $1 billion has been spent on site investigations at Yucca Mountain since 1982 As the Secretary recognizes that:

> Prior to the selection of Yucca Mountain site as the only site for investigation, the money spent at the Yucca Mountain site produced *useful and tangible results*. Much work has been conducted and much scientific information has been obtained. Over 220 boreholes of various depths have been drilled to obtain information on the geologic and hydrologic conditions at Yucca Mountain and to monitor these conditions; 95 trenches and soil pits have been excavated to obtain information on faulting and

> infiltration; nearly 600 monitoring stations are being utilized to obtain information on regional ground water, soil moisture, meteorological data, and seismic activity; over 40 surveys have been performed to examine archaeological, biological, and socioeconomic impacts, gravity and magnetic conditions, and to acquire geophysical data; underground tests have been performed on rock properties and spent fuel effects; and laboratory and modeling activities of the Yucca Mountain site have been conducted. These results justified continued focused characterization. These activities have been documented extensively in Program documents, such as the Site Characterization Plan that was published in December 1988 and related progress reports. (emphasis supplied).

DOE has a vast data base upon which to address and analyze Disqualifying Conditions as required by the Congress and the 10 C.F.R. Part 960 guidelines but it has refused and failed to do so.

Commissioner Forrest J. Remick, of the Nuclear Regulatory Commission, in a March 26, 1990 speech, pointed out the danger in DOE's failure to use the existing data base to implement the NWPA and the 10 C.F.R Part 960 guidelines with respect to site Disqualifying Conditions. He stated: "[I]n the language of statistical probability, false positive conclusions in the site selection and standard-setting processes are more to be feared than false negatives. In terms of public confidence and program momentum, the cost of overestimating the suitability of a site, or the ease of implementing a regulatory requirement, seems more likely to damage the national effort than premature abandonment of a qualified site . . . ." Appendix p. 247.

The DOE, at present, has assumed that the site is "suitable". DOE has willfully designed and implemented a program that fails to incorporate in a prudent and timely manner procedures and methodology to determine whether the existing data indicate that the site should be disqualified. To the extent the Secretary has permitted a program under his direction to be subverted in this manner, his actions are arbitrary, capricious, an abuse of discretion and contrary to law.

## V. CONCLUSION

For the reasons presented herein, Nevada is entitled to a declaratory judgment declaring that the NWPA Amendments Act is unconstitutional and recognizing that 1) Nevada has an absolute right to veto the selection of Yucca Mountain as a repository; 2) the notice of disapproval represented by AJR 4 and 6, is valid and effective; 3) the site is disapproved by Congress; 4) the Yucca Mountain site is unsuitable as a repository, and 5) Secretary Watkins' actions in refusing to recognize existing facts and conditions are arbitrary, capricious, an abuse of discretion, in excess of his statutory jurisdiction, and contrary to constitutional right. Nevada is entitled to an injunction terminating site characterization of Yucca Mountain and an Order directing Secretary Watkins to reclaim the site and report to Congress for new legislative authority pursuant to Section 113(c)(3)(F).

RESPECTFULLY SUBMITTED, this 16th day of May, 1990.

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ADDENDUM

# UNITED STATES CODE

## 1982 EDITION

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## SUPPLEMENT V

CONTAINING THE GENERAL AND PERMANENT LAWS OF
THE UNITED STATES, ENACTED DURING THE
98TH AND 99TH CONGRESSES AND
100TH CONGRESS, FIRST SESSION

Prepared and published under authority of Title 2, U.S. Code, Section 285b,
by the Office of the Law Revision Counsel of the House of Representatives

JANUARY 15, 1983, TO FEBRUARY 5, 1988

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TITLE 42—THE PUBLIC HEALTH AND WELFARE

TO

TITLE 44—PUBLIC PRINTING AND DOCUMENTS

UNITED STATES
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WASHINGTON : 1988

(B) involve significant new combinations of resources or new and innovative approaches involving partnership agreements; or

(C) are structured in a way that will, within the limits of the type of assistance or activities contemplated, most fully and effectively promote the purposes of the Community Services Block Grant Act [42 U.S.C. 9901 et seq.].

(2) No grant may be made under this section unless an application is submitted to the Secretary at such time, in such manner, and containing or accompanied by such information, as the Secretary may require.

**(b) Federal share; limitations**

(1) Grants awarded pursuant to this section shall be used for new programs and shall not exceed 50 per centum of the cost of such new programs.

(2) Non-Federal contributions may be in cash or in kind, fairly evaluated, including but not limited to plant, equipment, or services.

(3) Not more than one grant may be made to any eligible entity, and no grant may exceed $250,000.

(4) No application may be approved for assistance under this section unless the Secretary is satisfied that—

(A) the activities to be carried out under the application will be in addition to, and not in substitution for, activities previously carried on without Federal assistance; and

(B) funds or other resources devoted to programs designed to meet the needs of the poor within the community, area, or State will not be diminished in order to provide the matching contributions required under this section.

**(c) Dissemination of results**

As soon as practicable, but no later than 90 days after the expiration of the fiscal year for which any grant is awarded under this section, the Secretary shall prepare and make available upon request to each State and eligible entity descriptions of the demonstration programs assisted under this section, and any relevant information developed and results achieved, so as to provide models for innovative programs to other eligible entities.

**(d) Definitions**

As used in this section—

(1) the term "eligible entity" has the same meaning given such term by section 673(1) of the Community Services Block Grant Act (42 U.S.C. 9902(1)); and

(2) the term "Secretary" means the Secretary of Health and Human Services.

**(e) Authorization of appropriations**

There is authorized to be appropriated $5,000,000 for each of the fiscal years 1987, 1988, and 1989, to carry out this section.

(Pub. L. 99-425, title IV, § 408, Sept. 30, 1986, 100 Stat. 972.)

### REFERENCES IN TEXT

The Community Services Block Grant Act, referred to in subsec. (a)(1)(C), is subtitle B (§§ 671-683) of title VI of Pub. L. 97-35, Aug. 13, 1981, 95 Stat. 511, as amended, which is classified generally to this chapter (§ 9901 et seq.). For complete classification of this Act to the Code, see Short Title note set out under section 9901 of this title and Tables.

### CODIFICATION

Section was enacted as part of the Human Services Reauthorization Act of 1986, and not as part of the Community Services Block Grant Act which comprises this chapter.

### EFFECTIVE DATE

Section effective Oct. 1, 1986, see section 1001 of Pub. L. 99-425, set out as an Effective Date of 1986 Amendment note under section 8621 of this title.

## § 9912. Technical provisions

*[See main edition for text of (a) and (b)]*

**(c) Conforming provisions**

(1) Any reference in any provision of law to the poverty line set forth in section 624 or 625 of the Economic Opportunity Act of 1964 [42 U.S.C. 2971d] shall be construed to be a reference to the poverty line defined in section 9902(2) of this title.

*[See main edition for text of (2) and (3)]*

(As amended Pub. L. 98-288, § 31(b), May 21, 1984, 98 Stat. 198.)

### REFERENCES IN TEXT

The Economic Opportunity Act of 1964, referred to in text, is Pub. L. 88-452, Aug. 20, 1964, 78 Stat. 508, as amended, which was classified generally to chapter 34 (§ 2701 et seq.) of this title prior to repeal, except for titles VIII and X, by Pub. L. 97-35, title VI, § 683(a), Aug. 13, 1981, 95 Stat. 519. Title II of the Economic Opportunity Act of 1964 was classified generally to subchapter II (§ 2781 et seq.) of chapter 34 of this title. Titles VIII and X of the Act are classified generally to subchapters VIII (§ 2991 et seq.) and X (§ 2996 et seq.) of chapter 34 of this title. Section 625 of the Act, which was subsequently renumbered section 624 of the Act, was classified to section 2971d of this title, prior to repeal by section 683(a) of Pub. L. 97-35. For complete classification of this Act to the Code, see Tables.

### AMENDMENTS

1984—Subsec. (c)(1). Pub. L. 98-288 substituted "section 624 or 625" for "section 624".

# CHAPTER 108—NUCLEAR WASTE POLICY

## SUBCHAPTER I—DISPOSAL AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE, SPENT NUCLEAR FUEL, AND LOW-LEVEL RADIOACTIVE WASTE

### PART C—MONITORED RETRIEVABLE STORAGE

Sec.
10162. Authorization of monitored retrievable storage.
    (a) Nullification of Oak Ridge siting proposal.
    (b) Authorization.
10163. Monitored Retrievable Storage Commission.
10164. Survey.
10165. Site selection.
    (a) In general.
    (b) Limitation.
    (c) Site specific activities.
    (d) Environmental assessment.
    (e) Notification before selection.
    (f) Notification of selection.
    (g) Limitation.

Sec.
10166. Notice of disapproval.
(a) In general.
(b) References.
10167. Benefits agreement.
10168. Construction authorization.
(a) Environmental impact statement.
(b) Application for construction license.
(c) Licensing.
(d) Licensing conditions.
10169. Financial assistance.

Part E—Redirection of the Nuclear Waste Program

10172. Selection of Yucca Mountain site.
(a) In general.
(b) Eligibility to enter into benefits agreement.
10172a. Siting a second repository.
(a) Congressional action required.
(b) Report.
(c) Termination of granite research.
(d) Additional siting criteria.

Part F—Benefits

10173. Benefits agreements.
(a) In general.
(b) Amendment.
(c) Agreement with Nevada.
(d) Monitored retrievable storage.
(e) Limitation.
(f) Judicial review.
10173a. Content of agreements.
(a) In general.
(b) Contents.
(c) Payments by Secretary.
10173b. Review Panel.
(a) In general.
(b) Terms.
(c) Duties.
(d) Information.
(e) Federal Advisory Committee Act.
10173c. Termination.
(a) In general.
(b) Termination by State or Indian tribe.
(c) Decisions of Secretary.

Part G—Other Benefits

10174. Consideration in siting facilities.
10174a. Report.
(a) In general.
(b) Impacts to be considered.

Part H—Transportation

10175. Transportation.
(a) Packaging.
(b) Advance notification.
(c) Training for public safety officials.

SUBCHAPTER II—RESEARCH, DEVELOPMENT, AND DEMONSTRATION REGARDING DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

10204. Subseabed disposal.
(a) Study.
(b) Office of Subseabed Disposal Research.

SUBCHAPTER IV—NUCLEAR WASTE NEGOTIATOR

10241. "State" defined.
10242. Office of the Nuclear Waste Negotiator.
(a) Establishment.
(b) Nuclear Waste Negotiator.
10243. Duties of Negotiator.
(a) Negotiations with potential hosts.

Sec.
(b) Consultation with affected States subdivisions of States, and tribes.
(c) Consultation with other Federal agencies.
(d) Proposed agreement.
10244. Environmental assessment of sites.
(a) In general.
(b) Contents.
(c) Judicial review.
(d) Public hearings.
(e) Public availability.
(f) Evaluation of sites.
10245. Site characterization; licensing.
(a) Site characterization.
(b) Licensing.
10246. Monitored retrievable storage.
(a) Construction and operation.
(b) Financial assistance.
10247. Environmental impact statement.
(a) In general.
(b) Preparation.
(c) Adoption.
10248. Administrative powers of Negotiator.
10249. Cooperation of other departments and agencies.
10250. Termination of Office.
10251. Authorization of appropriations.

SUBCHAPTER V—NUCLEAR WASTE TECHNICAL REVIEW BOARD

10261. Definitions.
10262. Nuclear Waste Technical Review Board.
(a) Establishment.
(b) Members.
10263. Functions.
10264. Investigatory powers.
(a) Hearings.
(b) Production of documents.
10265. Compensation of members.
(a) In general.
(b) Travel expenses.
10266. Staff.
(a) Clerical staff.
(b) Professional staff.
10267. Support services.
(a) General services.
(b) Accounting, research, and technology assessment services.
(c) Additional support.
(d) Mails.
(e) Experts and consultants.
10268. Report.
10269. Authorization of appropriations.
10270. Termination of Board.

### § 10101. Definitions

For purposes of this chapter:

*[See main edition for text of (1) to (29)]*

(30) The term "Yucca Mountain site" means the candidate site in the State of Nevada recommended by the Secretary to the President under section 10132(b)(1)(B) of this title on May 27, 1986.

(31) The term "affected unit of local government" means the unit of local government with jurisdiction over the site of a repository or a monitored retrievable storage facility. Such term may, at the discretion of the Secretary, include units of local government that are contiguous with such unit.

(32) The term "Negotiator" means the Nuclear Waste Negotiator.

(33) As used in subchapter IV of this chapter, the term "Office" means the Office of

the Nuclear Waste Negotiator established under subchapter IV of this chapter.

(34) The term "monitored retrievable storage facility" means the storage facility described in section 10161(b)(1) of this title.

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5002, Dec. 22, 1987, 101 Stat. 1330-227.)

### AMENDMENTS

1987—Pars. (30) to (34). Pub. L. 100-202 and Pub. L. 100-203 amended section identically adding pars. (30) to (34).

### SHORT TITLE OF 1987 AMENDMENT

Section 101(d) [title III, § 300] of Pub. L. 100-202 and section 5001 of title V of Pub. L. 100-203 provided that: "This subtitle [subtitle A, §§ 5001 to 5065, of title V, enacting sections 10162, 10163, 10164, 10165, 10166, 10167, 10168, 10169, 10172, 10172a, 10173, 10173a, 10173b, 10173c, 10174, 10174a, 10175, 10204, 10241, 10242, 10243, 10244, 10245, 10246, 10247, 10248, 10249, 10250, 10251, 10261, 10262, 10263, 10264, 10265, 10266, 10267, 10268, 10269, and 10270 of this title, amending sections 10101, 10132, 10133, 10134, 10136, 10137, and 10138 of this title and enacting provisions set out as a note under section 5841 of this title] may be cited as the 'Nuclear Waste Policy Amendments Act of 1987'."

## SUBCHAPTER I—DISPOSAL AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE, SPENT NUCLEAR FUEL, AND LOW-LEVEL RADIOACTIVE WASTE

## PART A—REPOSITORIES FOR DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

### PART REFERRED TO IN OTHER SECTIONS

This part is referred to in sections 10107, 10175 of this title.

### § 10132. Recommendation of candidate sites for site characterization

*[See main edition for text of (a)]*

**(b) Recommendation by Secretary to the President**

(1) *[See main edition for text of (A) and (B)]*

(C) Such recommendations under subparagraph (B) shall be consistent with the provisions of section 10225 of this title.

(D) Each nomination of a site under this subsection shall be accompanied by an environmental assessment, which shall include a detailed statement of the basis for such recommendation and of the probable impacts of the site characterization activities planned for such site, and a discussion of alternative activities relating to site characterization that may be undertaken to avoid such impacts. Such environmental assessment shall include—

(i) an evaluation by the Secretary as to whether such site is suitable for site characterization under the guidelines established under subsection (a) of this section;

(ii) an evaluation by the Secretary as to whether such site is suitable for development as a repository under each such guideline that does not require site characterization as a prerequisite for application of such guideline;

(iii) an evaluation by the Secretary of the effects of the site characterization activities at such site on the public health and safety and the environment;

(iv) a reasonable comparative evaluation by the Secretary of such site with other sites and locations that have been considered.

(v) a description of the decision process by which such site was recommended; and

(vi) an assesament of the regional and local impacts of locating the proposed repository at such site.

(E)(i) [1] The issuance of any environmental assessment under this paragraph shall be considered to be a final agency action subject to judicial review in accordance with the provisions of chapter 7 of title 5 and section 10139 of this title. Such judicial review shall be limited to the sufficiency of such environmental assessment with respect to the items described in clauses (i) through (vi) of subparagraph (E).

(F) Each environmental assessment prepared under this paragraph shall be made available to the public.

(G) Before nominating a site, the Secretary shall notify the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, of such nomination and the basis for such nomination.

*[See main edition for text of (2) and (3); (c)]*

**(d) Preliminary activities**

Except as otherwise provided in this section, each activity of the President or the Secretary under this section shall be considered to be a preliminary decisionmaking activity. No such activity shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act.

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5011(b)-(d), Dec. 22, 1987, 101 Stat. 1330-228.)

### AMENDMENTS

1987—Subsec. (b)(1)(C) to (H). Pub. L. 100-202 and Pub. L. 100-203, § 5011(b), amended par. (1) identically, redesignating subpars. (D) to (H) as (C) to (G), respectively, in subpar. (C) substituting "subparagraph (B)" for "subparagraphs (B) and (C)", and striking out former subpar. (C) which read as follows: "Not later than July 1, 1989, the Secretary shall nominate 5 sites, which shall include at least 3 additional sites not nominated under subparagraph (A), and recommend by such date to the President from such 5 nominated sites 3 candidate sites the Secretary determines suitable for site characterization for selection of the second repository. The Secretary may not nominate any site previously nominated under subparagraph (A), that was not recommended as a candidate site under subparagraph (B)."

Subsec. (d). Pub. L. 100-202 and Pub. L. 100-203, § 5011(c), amended section identically, redesignating subsec. (e) as (d) and striking out former subsec. (d) which read as follows: "After the required recommendation of candidate sites under subsection (b) of this section, the Secretary may continue, as he determines necessary, to identify and study other sites to determine their suitability for recommendation for site characterization, in accordance with the procedures described in this section."

---

[1] So in original. There is no cl. (ii).

Subsec. (e). Pub. L. 100-202 and Pub. L. 100-203, § 5011(d), which contained identical amendments directing that subsec. (f) be struck out and all subsequent subsections be redesignated accordingly, was executed by striking out subsec. (e) as the probable intent of Congress because of the redesignation of former subsec. (f) as (e) by Pub. L. 100-202 and Pub. L. 100-203, § 5011(c), and the absence of any subsections subsequent to former subsec. (f). Subsec. (e) read as follows: "Nothing in this section may be construed as prohibiting the Secretary from continuing ongoing or presently planned site characterization at any site on Department of Energy land for which the location of the principal borehole has been approved by the Secretary by August 1, 1982, except that (1) the environmental assessment described in subsection (b)(1) of this section shall be prepared and made available to the public before proceeding to sink shafts at any such site; and (2) the Secretary shall not continue site characterization at any such site unless such site is among the candidate sites recommended by the Secretary under the first sentence of subsection (b) of this section for site characterization and approved by the President under subsection (c) of this section, and (3) the Secretary shall conduct public hearings under section 10133(b)(2) of this title and comply with requirements under section 10137 of this title within one year of January 7, 1983."

Pub. L. 100-202 and Pub. L. 100-203, § 5011(c), amended section identically, redesignating subsec. (f) as (e). Former subsec. (e) redesignated (d).

Subsec. (f). Pub. L. 100-202 and Pub. L. 100-203, § 5011(c), amended section identically, redesignating subsec. (f) as (e).

DELEGATION OF NOTIFICATION FUNCTION

Letter of the President of the United States, dated May 28, 1986, 51 F.R. 19531, provided:

Letter to the Honorable John S. Herrington, Secretary of Energy

*Dear Mr. Secretary:*

You are hereby authorized to perform the notification function vested in the President pursuant to Section 112(c)(1) of the Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10132(c)(1).

This document shall be published in the Federal Register.

Sincerely,

RONALD REAGAN.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10101, 10133, 10137, 10138, 10139, 10161, 10172a, 10221 of this title.

## § 10133. Site characterization

### (a) In general

The Secretary shall carry out, in accordance with the provisions of this section, appropriate site characterization activities at the Yucca Mountain site. The Secretary shall consider fully the comments received under subsection (b)(2) of this section and section 10132(b)(2) of this title and shall, to the maximum extent practicable and in consultation with the Governor of the State of Nevada, conduct site characterization activities in a manner that minimizes any significant adverse environmental impacts identified in such comments or in the environmental assessment submitted under subsection (b)(1) of this section.

### (b) Commission and States

(1) Before proceeding to sink shafts at the Yucca Mountain site, the Secretary shall submit for such candidate site to the Commission and to the Governor or legislature of the State of Nevada, for their review and comment—

[*See main edition for text of (A) to (C)*]

(2) Before proceeding to sink shafts at the Yucca Mountain site, the Secretary shall (A) make available to the public the site characterization plan described in paragraph (1); and (B) hold public hearings in the vicinity of such candidate site to inform the residents of the area in which such candidate site is located of such plan, and to receive their comments.

(3) During the conduct of site characterization activities at the Yucca Mountain site, the Secretary shall report not less than once every 6 months to the Commission and to the Governor and legislature of the State of Nevada, on the nature and extent of such activities and the information developed from such activities.

### (c) Restrictions

(1) The Secretary may conduct at the Yucca Mountain site only such site characterization activities as the Secretary considers necessary to provide the data required for evaluation of the suitability of such site for an application to be submitted to the Commission for a construction authorization for a repository at such site, and for compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(2) In conducting site characterization activities—

(A) the Secretary may not use any radioactive material at a site unless the Commission concurs that such use is necessary to provide data for the preparation of the required environmental reports and an application for a construction authorization for a repository at such site; and

(B) if any radioactive material is used at a site—

(i) the Secretary shall use the minimum quantity necessary to determine the suitability of such site for a repository, but in no event more than the curie equivalent of 10 metric tons of spent nuclear fuel; and

(ii) such radioactive material shall be fully retrievable.

(3) If the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall—

(A) terminate all site characterization activities at such site;

(B) notify the Congress, the Governor and legislature of Nevada of such termination and the reasons for such termination;

(C) remove any high-level radioactive waste, spent nuclear fuel, or other radioactive materials at or in such site as promptly as practicable;

(D) take reasonable and necessary steps to reclaim the site and to mitigate any significant adverse environmental impacts caused by site characterization activities at such site;

(E) suspend all future benefits payments under part F of this subchapter with respect to such site, and

(F) report to Congress not later than 6 months after such determination the Secretary's recommendations for further action to assure the safe, permanent disposal of spent nuclear fuel and high-level radioactive waste, including the need for new legislative authority.

(4) Repealed. Pub. L. 100-202, § 101(d) [Title III, § 300], Dec. 22, 1987, 101 Stat. 1329-121; Pub. L. 100-203, title V, § 5011(g)(3), Dec. 22, 1987, 101 Stat. 1330-229.

*[See main edition for text of (d)]*

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5011(e)-(g), Dec. 22, 1987, 101 Stat. 1330-228.)

### AMENDMENTS

1987—Subsec. (a). Pub. L. 100-202 and Pub. L. 100-203, § 5011(e)(2), which contained identical amendments directing that "at the Yucca Mountain site" be substituted for "beginning" and all that follows through "geological media", were executed by substituting "at the Yucca Mountain site" for "beginning with the candidate sites that have been approved under section 10132 of this title and are located in various geologic media" as the probable intent of Congress.

Pub. L. 100-202 and Pub. L. 100-203, § 5011(e)(1), amended subsec. (a) identically, substituting "State of Nevada" for "State involved or the governing body of the affected Indian tribe involved".

Subsec. (b)(1). Pub. L. 100-202 and Pub. L. 100-203, § 5011(f)(1), amended par. (1) identically, substituting "the Yucca Mountain site" for "any candidate site" and "the Governor or legislature of the State of Nevada" for "either the Governor and legislature of the State in which such candidate site is located, or the governing body of the affected Indian tribe on whose reservation such candidate site is located, as the case may be".

Subsec. (b)(2). Pub. L. 100-202 and Pub. L. 100-203, § 5011(f)(2), amended par. (2) identically, substituting "the Yucca Mountain site" for "any candidate site".

Subsec. (b)(3). Pub. L. 100-202 and Pub. L. 100-203, § 5011(f)(3), amended par. (3) identically, substituting "the Yucca Mountain site" for "a candidate site", striking "either" before "the Governor", and substituting "the State of Nevada" for "the State in which such candidate site is located, or the governing body of the affected Indian tribe where such candidate site is located, as the case may be".

Subsec. (c)(1). Pub. L. 100-202 and Pub. L. 100-203, § 5011(g)(1), amended par. (1) identically, substituting "the Yucca Mountain site" for "any candidate site", "suitability of such site" for "suitability of such candidate site", and "repository at such site" for "repository at such candidate site".

Subsec. (c)(2). Pub. L. 100-202 and Pub. L. 100-203, § 5011(g)(2), amended par. (2) identically, striking out "candidate" before "site" in two places in subpar. (A) and in two places in subpar. (B).

Subsec. (c)(3), (4). Pub. L. 100-202 and Pub. L. 100-203, § 5011(g)(3), amended subsec. (c) identically, adding par. (3) and striking out former pars. (3) and (4) which read as follows:

"(3) If site characterization activities are terminated at a candidate site for any reason, the Secretary shall (A) notify the Congress, the Governors and legislatures of all States in which candidate sites are located, and the governing bodies of all affected Indian tribes where candidate sites are located, of such termination and the reasons for such termination, and (B) remove any high-level radioactive waste, spent nuclear fuel, or other radioactive materials at or in such candidate site as promptly as practicable.

"(4) If a site is determined to be unsuitable for application for a construction authorization for a repository, the Secretary shall take reasonable and necessary steps to reclaim the site and to mitigate any significant adverse environmental impacts caused by site characterization activities."

### SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10101, 10132, 10134, 10136, 10244, 10245 of this title.

## § 10134. Site approval and construction authorization

### (a) Hearings and Presidential recommendation

(1) The Secretary shall hold public hearings in the vicinity of the Yucca Mountain site, for the purposes of informing the residents of the area of such consideration and receiving their comments regarding the possible recommendation of such site. If, upon completion of such hearings and completion of site characterization activities at the Yucca Mountain site, under section 10133 of this title, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State of Nevada, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 10133 of this title and this section, including the information described in subparagraph (A) through subparagraph (G). Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

*[See main edition for text of (A) to (C)]*

(D) a final environmental impact statement prepared for the Yucca Mountain site pursuant to subsection (f) of this section and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that the Secretary shall not be required in any such environmental impact statement to consider the need for a repository, the alternatives to geological disposal, or alternative sites to the Yucca Mountain site;

*[See main edition for text of (E) to (G)]*

**(H) any impact report submitted under section 10136(c)(2)(B) of this title by the State of Nevada.**

**(2)(A) If, after recommendation by the Secretary, the President considers the Yucca Mountain site qualified for application for a con-**

struction authorization for a repository, the President shall submit a recommendation of such site to Congress.

(B) The President shall submit with such recommendation a copy of the statement for such site prepared by the Secretary under paragraph (1).

(3)(A) The President may not recommend the approval of the Yucca Mountain site unless the Secretary has recommended to the President under paragraph (1) approval of such site and has submitted to the President a statement for such site as required under such paragraph.

(B) No recommendation of a site by the President under this subsection shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to[1] require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act.

### (b) Submission of application

If the President recommends to the Congress the Yucca Mountain site under subsection (a) of this section and the site designation is permitted to take effect under section 10135 of this title, the Secretary shall submit to the Commission an application for a construction authorization for a repository at such site not later than 90 days after the date on which the recommendation of the site designation is effective under such section and shall provide to the Governor and legislature of the State of Nevada a copy of such application.

*[See main edition for text of (c)]*

### (d) Commission action

The Commission shall consider an application for a construction authorization for all or part of a repository in accordance with the laws applicable to such applications, except that the Commission shall issue a final decision approving or disapproving the issuance of a construction authorization not later than the expiration of 3 years after the date of the submission of such application, except that the Commission may extend such deadline by not more than 12 months if, not less than 30 days before such deadline, the Commission complies with the reporting requirements established in subsection (e)(2) of this section. The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to part C of this subchapter, shall be located, or is planned to be located, within 50 miles of the first repository, then the Commission decision approving the first such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository is in operation.

### (e) Project decision schedule

(1) The Secretary shall prepare and update, as appropriate, in cooperation with all affected Federal agencies, a project decision schedule that portrays the optimum way to attain the operation of the repository, within the time periods specified in this part. Such schedule shall include a description of objectives and a sequence of deadlines for all Federal agencies required to take action, including an identification of the activities in which a delay in the start, or completion, of such activities will cause a delay in beginning repository operation.

*[See main edition for text of (2)]*

### (f) Environmental impact statement

(1) Any recommendation made by the Secretary under this section shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). A final environmental impact statement prepared by the Secretary under such Act shall accompany any recommendation to the President to approve a site for a repository.

(2) With respect to the requirements imposed by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), compliance with the procedures and requirements of this chapter shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to the isolation of high-level radioactive waste and spent nuclear fuel in a repository.

(3) For purposes of complying with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and this section, the Secretary need not consider alternate sites to the Yucca Mountain site for the repository to be developed under this part.

(4) Any environmental impact statement prepared in connection with a repository proposed to be constructed by the Secretary under this part shall, to the extent practicable, be adopted by the Commission in connection with the issuance by the Commission of a construction authorization and license for such repository. To the extent such statement is adopted by the Commission, such adoption shall be deemed to also satisfy the responsibilities of the Commission under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and no further consideration shall be required, except that nothing in this subsection shall affect any independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

(5) Nothing in this chapter shall be construed to amend or otherwise detract from the licensing requirements of the Nuclear Regulatory Commission established in title II of the

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[1] So in original. The word "to" probably should not appear.

Energy Reorganization Act of 1974 (42 U.S.C. 5841 et seq.).

(6) In any such statement prepared with respect to the repository to be constructed under this part, the Nuclear Regulatory Commission need not consider the need for a repository, the time of initial availability of a repository, alternate sites to the Yucca Mountain site, or nongeologic alternatives to such site.

(As amended Pub. L. 100-202, § 101(d) [title III § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5011(h)-(*l*), Dec. 22, 1987, 101 Stat. 1330-229, 1330-230.)

### References in Text

The Atomic Energy Act of 1954, referred to in subsec. (f)(4), is act Aug. 30, 1954, ch. 1073, 68 Stat. 921, as amended, which is classified generally to chapter 23 (§ 2011 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 2011 of this title and Tables.

The Energy Reorganization Act of 1974, referred to in subsec. (f)(5), is Pub. L. 93-438, Oct. 11, 1974, 88 Stat. 1233, as amended. Title II of the Energy Reorganization Act of 1974 is classified generally to subchapter II (§ 5841 et seq.) of chapter 73 of this title. For complete classification of this Act to the Code, see Short Title note set out under section 5801 of this title and Tables.

### Amendments

1987—Subsec. (a)(1). Pub. L. 100-202 and Pub. L. 100-203, § 5011(h)(1)(A)-(E), amended par. (1) identically, in introductory provisions substituting "vicinity of the Yucca Mountain site" for "vicinity of each site under consideration for recommendation to the President under this paragraph as a site for the development of a repository", striking out "in which such site is located" after "residents of the area", substituting "activities at the Yucca Mountain site" for "activities at not less than 3 candidate sites for the first proposed repository, or from all of the characterized sites for the development of subsequent repositories" and "of Nevada" for "in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be", and struck out before last sentence "In making site recommendations and approvals subsequent to the first site recommendation, the Secretary and the President, respectively, shall also consider the need for regional distribution of repositories and the need to minimize, to the extent practicable, the impacts and cost of transporting spent fuel and solidified high-level radioactive waste."

Subsec. (a)(1)(D). Pub. L. 100-202 and Pub. L. 100-203, § 5011(h)(1)(F), generally amended subpar. (D) identically. Prior to amendment, subpar. (D) read as follows: "a final environmental impact statement prepared pursuant to subsection (f) of this section and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), including an analysis of the consideration given by the Secretary to not less than 3 candidate sites for the first proposed respository [sic] or to all of the characterized sites for the development of subsequent repositories, with respect to which site characterization is completed under section 10133 of this title, together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that any such environmental impact statement concerning the first repository to be developed under this chapter shall not be required to consider the need for a repository or the alternatives to geologic disposal;".

Subsec. (a)(1)(H). Pub. L. 100-202 and Pub. L. 100-203, § 5011(h)(1)(G), amended subpar. (H) identically, substituting "the State of Nevada" for "the State in which such site is located, or under section 10138(b)(3)(B) of this title by the affected Indian tribe where such site is located, as the case may be".

Subsec. (a)(2). Pub. L. 100-202 and Pub. L. 100-203, § 5011(h)(2), amended subsec. (a) identically, adding par. (2) and striking out former par. (2) which required submission of recommendation of one site for repository not later than Mar. 31, 1987, and recommendation of second site not later than Mar. 31, 1990, and permitted subsequent recommendations for other sites and extension of deadlines.

Subsec. (a)(3), (4). Pub. L. 100-202 and Pub. L. 100-203, § 5011(h)(2), (3), amended subsec. (a) identically, redesignating par. (4) as (3), in subpar. (A), substituting "the Yucca Mountain site" for "any site under this subsection" and "statement" for "report", and striking out former par. (3) which read as follows: "If approval of any such site recommendation does not take effect as a result of a disapproval by the Governor or legislature of a State under section 10136 of this title or the governing body of an affected Indian tribe under section 10138 of this title, the President shall submit to the Congress, not later than 1 year after the disapproval of such recommendation, a recommendation of another site for the first or subsequent repository."

Subsec. (b). Pub. L. 100-202 and Pub. L. 100-203, § 5011(i), amended subsec. (b) identically, substituting "the Yucca Mountain site" for "a site for a repository" and "State of Nevada" for "State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be,".

Subsec. (d). Pub. L. 100-202 and Pub. L. 100-203, § 5011(j), amended subsec. (d) identically, substituting "than the expiration" for "than— (1) January 1, 1989, for the first such application, and January 1, 1992 for the second such application, or (2) the expiration" and "subsection (e)(2) of this section" for "subsection (e)(2) of this section, whichever occurs later".

Subsec. (e)(1). Pub. L. 100-202 and Pub. L. 100-203, § 5011(k), amended par. (1) identically, substituting "operation of the repository" for "operation of the repository involved".

Subsec. (f). Pub. L. 100-202 and Pub. L. 100-203, § 5011(*l*), generally amended subsec. (f) identically, substituting provisions consisting of pars. (1) to (6) for former provisions consisting of single unnumbered par.

### Section Referred to in Other Sections

This section is referred to in sections 10135, 10136, 10138, 10142, 10165 of this title.

## § 10135. Review of repository site selection

### Section Referred to in Other Sections

This section is referred to in sections 10121, 10134, 10136, 10138, 10155, 10161, 10166, 10168, 10225 of this title.

## § 10136. Participation of States

*[See main edition for text of (a) and (b)]*

### (c) Financial assistance

(1)(A) The Secretary shall make grants to the State of Nevada and any affected unit of local government for the purpose of participating in activities required by this section and section 10137 of this title or authorized by written agreement entered into pursuant to section 10137(c) of this title. Any salary or travel expense that would ordinarily be incurred by such State or affected unit of local government, may not be considered eligible for funding under this paragraph.

(B) The Secretary shall make grants to the State of Nevada and any affected unit of local government for purposes of enabling such State or affected unit of local government—

(i) to review activities taken under this part with respect to the Yucca Mountain site for purposes of determining any potential economic, social, public health and safety, and environmental impacts of a repository on such State, or affected unit of local government and its residents;

(ii) to develop a request for impact assistance under paragraph (2);

(iii) to engage in any monitoring, testing, or evaluation activities with respect to site characterization programs with regard to such site;

(iv) to provide information to Nevada residents regarding any activities of such State, the Secretary, or the Commission with respect to such site; and

(v) to request information from, and make comments and recommendations to, the Secretary regarding any activities taken under this part with respect to such site.

(C) Any salary or travel expense that would ordinarily be incurred by the State of Nevada or any affected unit of local government may not be considered eligible for funding under this paragraph.

(2)(A)(i) The Secretary shall provide financial and technical assistance to the State of Nevada, and any affected unit of local government requesting such assistance.

(ii) Such assistance shall be designed to mitigate the impact on such State or affected unit of local government of the development of such repository and the characterization of such site.

(iii) Such assistance to such State or affected unit of local government of such State shall commence upon the initiation of site characterization activities.

(B) The State of Nevada and any affected unit of local government may request assistance under this subsection by preparing and submitting to the Secretary a report on the economic, social, public health and safety, and environmental impacts that are likely to result from site characterization activities at the Yucca Mountain site. Such report shall be submitted to the Secretary after the Secretary has submitted to the State a general plan for site characterization activities under section 10133(b) of this title.

(C) As soon as practicable after the Secretary has submitted such site characterization plan, the Secretary shall seek to enter into a binding agreement with the State of Nevada setting forth—

(i) the amount of assistance to be provided under this subsection to such State or affected unit of local government; and

(ii) the procedures to be followed in providing such assistance.

(3)(A) In addition to financial assistance provided under paragraphs (1) and (2), the Secretary shall grant to the State of Nevada and any affected unit of local government an amount each fiscal year equal to the amount such State or affected unit of local government, respectively, would receive if authorized to tax site characterization activities at such site, and the development and operation of such repository, as such State or affected unit of local government taxes the non-Federal real property and industrial activities occurring within such State or affected unit of local government.

(B) Such grants shall continue until such time as all such activities, development, and operation are terminated at such site.

(4)(A) The State of Nevada or any affected unit of local government may not receive any grant under paragraph (1) after the expiration of the 1-year period following—

(i) the date on which the Secretary notifies the Governor and legislature of the State of Nevada of the termination of site characterization activities at the site in such State;

(ii) the date on which the Yucca Mountain site is disapproved under section 10135 of this title; or

(iii) the date on which the Commission disapproves an application for a construction authorization for a repository at such site;

whichever occurs first.

(B) The State of Nevada or any affected unit of local government may not receive any further assistance under paragraph (2) with respect to a site if repository construction activities or site characterization activities at such site are terminated by the Secretary or if such activities are permanently enjoined by any court.

(C) At the end of the 2-year period beginning on the effective date of any license to receive and possess for a repository in a State, no Federal funds, shall be made available to such State or affected unit of local government under paragraph (1) or (2), except for—

(i) such funds as may be necessary to support activities related to any other repository located in, or proposed to be located in, such State, and for which a license to receive and possess has not been in effect for more than 1 year;

(ii) such funds as may be necessary to support State activities pursuant to agreements or contracts for impact assistance entered into, under paragraph (2), by such State with the Secretary during such 2-year period; and

(iii) such funds as may be provided under an agreement entered into under subchapter IV of this chapter.

(5) Financial assistance authorized in this subsection shall be made out of amounts held in the Waste Fund.

(6) No State, other than the State of Nevada, may receive financial assistance under this subsection after December 22, 1987.

[*See main edition for text of* (*d*)]

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5032(a), Dec. 22, 1987, 101 Stat. 1330-241.)

### AMENDMENTS

1987—Subsec. (c). Pub. L. 100-202 and Pub. L. 100-203 generally amended subsec. (c) identically, substituting provisions consisting of pars. (1) to (6) for former provisions consisting of pars. (1) to (5).

#### Section Referred to in Other Sections

This section is referred to in sections 10121, 10134, 10135, 10137, 10138, 10161, 10166, 10169, 10173a, 10222, 10243 of this title.

### § 10137. Consultation with States and affected Indian tribes

[*See main edition for text of* (a) *to* (c)]

**(d) On-site representative**

The Secretary shall offer to any State, Indian tribe or unit of local government within whose jurisdiction a site for a repository or monitored retrievable storage facility is located under this subchapter an opportunity to designate a representative to conduct on-site oversight activities at such site. Reasonable expenses of such representatives shall be paid out of the Waste Fund.

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5011(m), Dec. 22, 1987, 101 Stat. 1330-231.)

#### Amendments

1987—Subsec. (d). Pub. L. 100-202 and Pub. L. 100-203 amended section identically, adding subsec. (d).

#### Section Referred to in Other Sections

This section is referred to in sections 10121, 10136, 10138, 10161, 10243 of this title.

### § 10138. Participation of Indian tribes

[*See main edition for text of* (a)]

**(b) Financial assistance**

[*See main edition for text of* (1) *to* (4)]

(5)[6] An affected Indian tribe may not receive any grant under paragraph (1) after the expiration of the 1-year period following—

[*See main edition for text of* (i)]

(ii) the date on which such site is disapproved under section 10135 of this title;

(iii) the date on which the Commission disapproves an application for a construction authorization for a repository at such site;[7]

(iv) December 22, 1987;

whichever occurs first, unless there is another candidate site on the reservation of such Indian tribe that is approved under section 10132(c) of this title and with respect to which the actions described in clauses (i), (ii), and (iii) have not been taken.

[*See main edition for text of* (B) *and* (C), (6)]

(As amended Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5033, Dec. 22, 1987, 101 Stat. 1330-243.)

#### Amendments

1987—Subsec. (b)(5)(iv). Pub. L. 100-202 and Pub. L. 100-203 amended par. (5) identically, adding cl. (iv).

#### Section Referred to in Other Sections

This section is referred to in sections 10121, 10135, 10137, 10161, 10166, 10169, 10173a, 10222, 10243 of this title.

### § 10139. Judicial review of agency actions

#### Section Referred to in Other Sections

This section is referred to in sections 10132, 10145, 10155, 10201, 10244 of this title.

## Part C—Monitored Retrievable Storage

#### Part Referred to in Other Sections

This part is referred to in sections 10134, 10175 of this title.

### § 10161. Monitored retrievable storage

#### Section Referred to in Other Sections

This section is referred to in sections 10101, 10168, 10200 of this title.

### § 10162. Authorization of monitored retrievable storage

**(a) Nullification of Oak Ridge siting proposal**

The proposal of the Secretary (EC-1022, 100th Congress) to locate a monitored retrievable storage facility at a site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee, with alternative sites on the Oak Ridge Reservation of the Department of Energy and on the former site of a proposed nuclear powerplant in Hartsville, Tennessee, is annulled and revoked. In carrying out the provisions of sections 10164 and 10165 of this title, the Secretary shall make no presumption or preference to such sites by reason of their previous selection.

**(b) Authorization**

The Secretary is authorized to site, construct, and operate one monitored retrievable storage facility subject to the conditions described in sections 10163 through 10169 of this title.

(Pub. L. 97-425, title I, § 142, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5021, Dec. 22, 1987, 101 Stat. 1330-232.)

#### Codification

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

#### Section Referred to in Other Sections

This section is referred to in sections 10165, 10168 of this title.

### § 10163. Monitored Retrievable Storage Commission

**(a)[1] Establishment**

(1)(A) There is established a Monitored Retrievable Storage Review Commission (herein-

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[6] So in original. Probably should be designated "(5)(A)".

[7] So in original. Probably should be followed by "or".

[1] So in original. Section enacted without a subsec. (b).

#### Codification

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

#### Section Referred to in Other Sections

This section is referred to in section 10162 of this title.

### § 10169. Financial assistance

The provisions of section 10136(c) or 10138(b) of this title with respect to grants, technical assistance, and other financial assistance shall apply to the State, to affected Indian tribes and to affected units of local government in the case of a monitored retrievable storage facility in the same manner as for a repository.

(Pub. L. 97-425, title I, § 149, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5021, Dec. 22, 1987, 101 Stat. 1330-236.)

#### Codification

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

#### Section Referred to in Other Sections

This section is referred to in section 10162 of this title.

## Part E—Redirection of the Nuclear Waste Program

### § 10172. Selection of Yucca Mountain site

**(a) In general**

(1) The Secretary shall provide for an orderly phase-out of site specific activities at all candidate sites other than the Yucca Mountain site.

(2) The Secretary shall terminate all site specific activities (other than reclamation activities) at all candidate sites, other than the Yucca Mountain site, within 90 days after December 22, 1987.

**(b) Eligibility to enter into benefits agreement**

Effective on December 22, 1987, the State of Nevada shall be eligible to enter into a benefits agreement with the Secretary under section 10173 of this title.

(Pub. L. 97-425, title I, § 160, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5011(a), Dec. 22, 1987, 101 Stat. 1330-227.)

#### Codification

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

### § 10172a. Siting a second repository

**(a) Congressional action required**

The Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities.

**(b) Report**

The Secretary shall report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository.

**(c) Termination of granite research**

Not later than 6 months after December 22, 1987, the Secretary shall phase out in an orderly manner funding for all research programs in existence on December 22, 1987, designed to evaluate the suitability of crystalline rock as a potential repository host medium.

**(d) Additional siting criteria**

In the event that the Secretary at any time after December 22, 1987, considers any sites in crystalline rock for characterization or selection as a repository, the Secretary shall consider (as a supplement to the siting guidelines under section 10132 of this title) such potentially disqualifying factors as—

(1) seasonal increases in population,

(2) proximity to public drinking water supplies, including those of metropolitan areas; and

(3) the impact that characterization or siting decisions would have on lands owned or placed in trust by the United States for Indian tribes.

(Pub. L. 97-425, title I, § 161, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5012, Dec. 22, 1987, 101 Stat. 1330-231.)

#### Codification

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

## Part F—Benefits

#### Part Referred to in Other Sections

This part is referred to in section 10133 of this title.

### § 10173. Benefits agreements

**(a) In general**

(1) The Secretary may enter into a benefits agreement with the State of Nevada concerning a repository or with a State or an Indian tribe concerning a monitored retrievable storage facility for the acceptance of high-level radioactive waste or spent nuclear fuel in that State or on the reservation of that tribe, as appropriate.

(2) The State or Indian tribe may enter into such an agreement only if the State Attorney General or the appropriate governing authority of the Indian tribe or the Secretary of the Interior, in the absence of an appropriate governing authority, as appropriate, certifies to the satisfaction of the Secretary that the laws of the State or Indian tribe provide adequate authority for that entity to enter into the benefits agreement.

(3) Any benefits agreement with a State under this section shall be negotiated in consultation with affected units of local government in such State.

(4) Benefits and payments under this part may be made available only in accordance with a benefits agreement under this section.

**(b) Amendment**

A benefits agreement entered into under subsection (a) of this section may be amended only by the mutual consent of the parties to the agreement and terminated only in accordance with section 10173c of this title.

**(c) Agreement with Nevada**

The Secretary shall offer to enter into a benefits agreement with the Governor of Nevada. Any benefits agreement with a State under this subsection shall be negotiated in consultation with any affected units of local government in such State.

**(d) Monitored retrievable storage**

The Secretary shall offer to enter into a benefits agreement relating to a monitored retrievable storage facility with the governing body of the Indian tribe on whose reservation the site for such facility is located, or, if the site is not located on a reservation, with the Governor of the State in which the site is located and in consultation with affected units of local government in such State.

**(e) Limitation**

Only one benefits agreement for a repository and only one benefits agreement for a monitored retrievable storage facility may be in effect at any one time.

**(f) Judicial review**

Decisions of the Secretary under this section are not subject to judicial review.

(Pub. L. 97-425, title I, § 170, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330-237.)

CODIFICATION

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10167, 10172, 10173a of this title.

### § 10173a. Content of agreements

**(a) In general**

(1) In addition to the benefits to which a State, an affected unit of local government or Indian tribe is entitled under this subchapter, the Secretary shall make payments to a State or Indian tribe that is a party to a benefits agreement under section 10173 of this title in accordance with the following schedule:

BENEFITS SCHEDULE

(amounts in $ millions)

| Event | MRS | Repository |
|---|---|---|
| (A) Annual payments prior to first spent fuel receipt | 5 | 10 |
| (B) Upon first spent fuel receipt | 10 | 20 |
| (C) Annual payments after first spent fuel receipt until closure of the facility | 10 | 20 |

(2) For purposes of this section, the term—

(A) "MRS" means a monitored retrievable storage facility,

(B) "spent fuel" means high-level radioactive waste or spent nuclear fuel, and

(C) "first spent fuel receipt" does not include receipt of spent fuel or high-level radioactive waste for purposes of testing or operational demonstration.

(3) Annual payments prior to first spent fuel receipt under paragraph (1)(A) shall be made on the date of execution of the benefits agreement and thereafter on the anniversary date of such execution. Annual payments after the first spent fuel receipt until closure of the facility under paragraph (1)(C) shall be made on the anniversary date of such first spent fuel receipt.

(4) If the first spent fuel payment under paragraph (1)(B) is made within six months after the last annual payment prior to the receipt of spent fuel under paragraph (1)(A), such first spent fuel payment under paragraph (1)(B) shall be reduced by an amount equal to one-twelfth of such annual payment under paragraph (1)(A) for each full month less than six that has not elapsed since the last annual payment under paragraph (1)(A).

(5) Notwithstanding paragraph (1), (2), or (3), no payment under this section may be made before January 1, 1989, and any payment due under this subchapter before January 1, 1989, shall be made on or after such date.

(6) Except as provided in paragraph (7), the Secretary may not restrict the purposes for which the payments under this section may be used.

(7)(A) Any State receiving a payment under this section shall transfer an amount equal to not less than one-third of the amount of such payment to affected units of local government of such State.

(B) A plan for this transfer and appropriate allocation of such portion among such governments shall be included in the benefits agreement under section 10173 of this title covering such payments.

(C) In the event of a dispute concerning such plan, the Secretary shall resolve such dispute, consistent with this chapter and applicable State law.

**(b) Contents**

A benefits agreement under section 10173 of this title shall provide that—

(1) a Review Panel be established in accordance with section 10173b of this title;

(2) the State or Indian tribe that is party to such agreement waive its rights under this subchapter to disapprove the recommendation of a site for a repository;

(3) the parties to the agreement shall share with one another information relevant to the licensing process for the repository or monitored retrievable storage facility, as it becomes available;

(4) the State or Indian tribe that is party to such agreement participate in the design of the repository or monitored retrievable storage facility and in the preparation of documents required under law or regulation governing the effects of the facility on the public health and safety; and

(5) the State or Indian tribe waive its rights, if any, to impact assistance under

sections 10136(c)(1)(B)(ii), 10136(c)(2), 10138(b)(2)(A)(ii), and 10138(b)(3) of this title.

**(c) Payments by Secretary**

The Secretary shall make payments to the States or affected Indian tribes under a benefits agreement under this section from the Waste Fund. The signature of the Secretary on a valid benefits agreement under section 10173 of this title shall constitute a commitment by the United States to make payments in accordance with such agreement.

(Pub. L. 97–425, title I, § 171, as added Pub. L. 100–202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329–104, 1329–121; Pub. L. 100–203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330–237.)

CODIFICATION

Pub. L. 100–202 and Pub. L. 100–203 added identical sections.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10173b, 10174a of this title.

### § 10173b. Review Panel

**(a) In general**

The Review Panel required to be established by section 10173a(b)(1) of this title shall consist of a Chairman selected by the Secretary in consultation with the Governor of the State or governing body of the Indian tribe, as appropriate, that is party to such agreement and 6 other members as follows:

(1) 2 members selected by the Governor of such State or governing body of such Indian tribe;

(2) 2 members selected by units of local government affected by the repository or monitored retrievable storage facility;

(3) 1 member to represent persons making payments into the Waste Fund, to be selected by the Secretary; and

(4) 1 member to represent other public interests, to be selected by the Secretary.

**(b) Terms**

(1) The members of the Review Panel shall serve for terms of 4 years each.

(2) Members of the Review Panel who are not full-time employees of the Federal Government, shall receive a per diem compensation for each day spent conducting work of the Review Panel, including their necessary travel or other expenses while engaged in the work of the Review Panel.

(3) Expenses of the Panel shall be paid by the Secretary from the Waste Fund.

**(c) Duties**

The Review Panel shall—

(1) advise the Secretary on matters relating to the proposed repository or monitored retrievable storage facility, including issues relating to design, construction, operation, and decommissioning of the facility;

(2) evaluate performance of the repository or monitored retrievable storage facility, as it considers appropriate;

(3) recommend corrective actions to the Secretary;

(4) assist in the presentation of State or affected Indian tribe and local perspectives to the Secretary; and

(5) participate in the planning for and the review of preoperational data on environmental, demographic, and socioeconomic conditions of the site and the local community.

**(d) Information**

The Secretary shall promptly[1] make available promptly[1] any information in the Secretary's possession requested by the Panel or its Chairman.

**(e) Federal Advisory Committee Act**

The requirements of the Federal Advisory Committee Act shall not apply to a Review Panel established under this subchapter.

(Pub. L. 97–425, title I, § 172, as added Pub. L. 100–202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329–104, 1329–121; Pub. L. 100–203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330–239.)

REFERENCES IN TEXT

The Federal Advisory Committee Act, referred to in subsec. (e), is Pub. L. 92–463, Oct. 6, 1972, 86 Stat. 770, as amended, which is set out in the Appendix to Title 5, Government Organization and Employees.

CODIFICATION

Pub. L. 100–202 and Pub. L. 100–203 added identical sections.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 10173a of this title.

### § 10173c. Termination

**(a) In general**

The Secretary may terminate a benefits agreement under this subchapter if—

(1) the site under consideration is disqualified for its failure to comply with guidelines and technical requirements established by the Secretary in accordance with this chapter; or

(2) the Secretary determines that the Commission cannot license the facility within a reasonable time.

**(b) Termination by State or Indian tribe**

A State or Indian tribe may terminate a benefits agreement under this subchapter only if the Secretary disqualifies the site under consideration for its failure to comply with technical requirements established by the Secretary in accordance with this chapter or the Secretary determines that the Commission cannot license the facility within a reasonable time.

**(c) Decisions of Secretary**

Decisions of the Secretary under this section shall be in writing, shall be available to Congress and the public, and are not subject to judicial review.

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[1] So in original.

(Pub. L. 97–425, title I, § 173, as added Pub. L. 100–202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329–104, 1329–121; Pub. L. 100–203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330–240.)

#### Codification

Pub. L. 100–202 and Pub. L. 100–203 added identical sections.

#### Section Referred to in Other Sections

This section is referred to in section 10173 of this title.

## Part G—Other Benefits

### § 10174. Consideration in siting facilities

The Secretary, in siting Federal research projects, shall give special consideration to proposals from States where a repository is located.

(Pub. L. 97–425, title I, § 174, as added Pub. L. 100–202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329–104, 1329–121; Pub. L. 100–203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330–240.)

#### Codification

Pub. L. 100–202 and Pub. L. 100–203 added identical sections.

### § 10174a. Report

**(a) In general**

Within one year of December 22, 1987, the Secretary shall report to Congress on the potential impacts of locating a repository at the Yucca Mountain site, including the recommendations of the Secretary for mitigation of such impacts and a statement of which impacts should be dealt with by the Federal Government, which should be dealt with by the State with State resources, including the benefits payments under section 10173a of this title, and which should be a joint Federal-State responsibility. The report under this subsection shall include the analysis of the Secretary of the authorities available to mitigate these impacts and the appropriate sources of funds for such mitigation.

**(b) Impacts to be considered**

Potential impacts to be addressed in the report under this [1] subsection (a) of this section shall include impacts on—

(1) education, including facilities and personnel for elementary and secondary schools, community colleges, vocational and technical schools and universities;

(2) public health, including the facilities and personnel for treatment and distribution of water, the treatment of sewage, the control of pests and the disposal of solid waste;

(3) law enforcement, including facilities and personnel for the courts, police and sheriff's departments, district attorneys and public defenders and prisons;

(4) fire protection, including personnel, the construction of fire stations, and the acquisition of equipment;

(5) medical care, including emergency services and hospitals;

(6) cultural and recreational needs, including facilities and personnel for libraries and museums and the acquisition and expansion of parks;

(7) distribution of public lands to allow for the timely expansion of existing, or creation of new, communities and the construction of necessary residential and commercial facilities;

(8) vocational training and employment services;

(9) social services, including public assistance programs, vocational and physical rehabilitation programs, mental health services, and programs relating to the abuse of alcohol and controlled substances;

(10) transportation, including any roads, terminals, airports, bridges, or railways associated with the facility and the repair and maintenance of roads, terminals, airports, bridges, or railways damaged as a result of the construction, operation, and closure of the facility;

(11) equipment and training for State and local personnel in the management of accidents involving high-level radioactive waste;

(12) availability of energy;

(13) tourism and economic development, including the potential loss of revenue and future economic growth; and

(14) other needs of the State and local governments that would not have arisen but for the characterization of the site and the construction, operation, and eventual closure of the repository facility.

(Pub. L. 97–425, title I, § 175, as added Pub. L. 100–202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329–104, 1329–121; Pub. L. 100–203, title V, § 5031, Dec. 22, 1987, 101 Stat. 1330–240.)

#### Codification

Pub. L. 100–202 and Pub. L. 100–203 added identical sections.

## Part H—Transportation

### § 10175. Transportation

**(a) Packaging**

No spent nuclear fuel or high-level radioactive waste may be transported by or for the Secretary under part A of this subchapter or under part C of this subchapter except in packages that have been certified for such purpose by the Commission.

**(b) Advance notification**

The Secretary shall abide by regulations of the Commission regarding advance notification of State and local governments prior to transportation of spent nuclear fuel or high-level radioactive waste under part A of this subchapter or under part C of this subchapter.

**(c) Training for public safety officials**

The Secretary shall provide technical assistance and funds to States for training for public safety officials of appropriate units of local government and Indian tribes through whose jurisdiction the Secretary plans to transport spent nuclear fuel or high-level radioactive waste under part A of this subchapter or under part C of this subchapter. Training shall cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. The Waste Fund shall be the source of funds for work carried out under this subsection.

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[1] So in original. The word "this" probably should not appear.

(Pub. L. 97-425, title I, § 180, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5061, Dec. 22, 1987, 101 Stat. 1330-251.)

CODIFICATION

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

## SUBCHAPTER II—RESEARCH, DEVELOPMENT, AND DEMONSTRATION REGARDING DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

### § 10203. Technical assistance to non-nuclear weapon states in the field of spent fuel storage and disposal

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in title 22 section 3057.

### § 10204. Subseabed disposal

**(a) Study**

Within 270 days after December 22, 1987, the Secretary shall report to Congress on subseabed disposal of spent nuclear fuel and high-level radioactive waste. The report under this subsection shall include—

(1) an assessment of the current state of knowledge of subseabed disposal as an alternative technology for disposal of spent nuclear fuel and high-level radioactive waste;

(2) an estimate of the costs of subseabed disposal;

(3) an analysis of institutional factors associated with subseabed disposal, including international aspects of a decision of the United States to proceed with subseabed disposal as an option for nuclear waste management;

(4) a full discussion of the environmental and public health and safety aspects of subseabed disposal;

(5) recommendations on alternative ways to structure an effort in research, development, and demonstration with respect to subseabed disposal; and

(6) the recommendations of the Secretary with respect to research, development and demonstration in subseabed disposal of spent nuclear fuel and high-level radioactive waste.

**(b) Office of Subseabed Disposal Research**

(1) There is hereby established an Office of Subseabed Disposal Research within the Office of Energy Research of the Department of Energy. The Office shall be headed by the Director, who shall be a member of the Senior Executive Service appointed by the Director of the Office of Energy Research, and compensated at a rate determined by applicable law.

(2) The Director of the Office of Subseabed Disposal Research shall be responsible for carrying out research, development, and demonstration activities on all aspects of subseabed disposal of high-level radioactive waste and spent nuclear fuel, subject to the general supervision of the Secretary. The Director of the Office shall be directly responsible to the Director of the Office of Energy Research, and the first such Director shall be appointed within 30 days of December 22, 1987.

(3) In carrying out his responsibilities under this chapter, the Secretary may make grants to, or enter into contracts with, the Subseabed Consortium described in subsection (d) of this section, and other persons.

(4)(A) Within 60 days of December 22, 1987, the Secretary shall establish a university-based Subseabed Consortium involving leading oceanographic universities and institutions, national laboratories, and other organizations to investigate the technical and institutional feasibility of subseabed disposal.

(B) The Subseabed Consortium shall develop a research plan and budget to achieve the following objectives by 1995:

(i) demonstrate the capacity to identify and characterize potential subseabed disposal sites;

(ii) develop conceptual designs for a subseabed disposal system, including estimated costs and institutional requirements; and

(iii) identify and assess the potential impacts of subseabed disposal on the human and marine environment.

(C) In 1990, and again in 1995, the Subseabed Consortium shall report to Congress on the progress being made in achieving the objectives of paragraph (2).

(5) The Director of the Office of Subseabed Disposal Research shall annually prepare and submit a report to the Congress on the activities and expenditures of the Office.

(Pub. L. 97-425, title II, § 224, as added Pub. L. 100-202, § 101(d) [title III, § 300], Dec. 22, 1987, 101 Stat. 1329-104, 1329-121; Pub. L. 100-203, title V, § 5063, Dec. 22, 1987, 101 Stat. 1330-253.)

CODIFICATION

Pub. L. 100-202 and Pub. L. 100-203 added identical sections.

## SUBCHAPTER III—OTHER PROVISIONS RELATING TO RADIOACTIVE WASTE

### § 10222. Nuclear Waste Fund

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10101, 10107, 1013[illegible], 10161, 10193, 10194, 10251, 10269 of this title.

## SUBCHAPTER IV—NUCLEAR WASTE NEGOTIATOR

SUBCHAPTER REFERRED TO IN OTHER SECTIONS

This subchapter is referred to in sections 10101, 10[illegible] of this title.

# UNITED STATES CODE

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## VOLUME SIXTEEN

## TITLE 42—THE PUBLIC HEALTH AND WELFARE
§ 1981-END

UNITED STATES
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### § 10008. Applicability to Federal agencies

(a) Except as provided in subsection (b) of this section, each department, agency, and instrumentality of the executive branch of the Federal Government shall comply with standards promulgated pursuant to this chapter.

(b)(1) The Administrator of Veterans' Affairs, through the Chief Medical Director of the Veterans' Administration, shall, to the maximum extent feasible consistent with the responsibilities of such Administrator and Chief Medical Director under title 38, prescribe regulations making the standards promulgated pursuant to this chapter applicable to the provision of radiologic procedures in facilities over which the Administrator has jurisdiction. In prescribing and implementing regulations pursuant to this subsection, the Administrator shall consult with the Secretary in order to achieve the maximum possible coordination of the regulations, standards, and guidelines, and the implementation thereof, which the Secretary and the Administrator prescribe under this chapter.

(2) Not later than 180 days after standards are promulgated by the Secretary pursuant to this chapter, the Administrator of Veterans' Affairs shall submit to the appropriate committees of Congress a full report with respect to the regulations (including guidelines, policies and procedures thereunder) prescribed pursuant to paragraph (1) of this subsection. Such report shall include—

(A) an explanation of any inconsistency between standards made applicable by such regulations and the standards promulgated by the Secretary pursuant to this chapter;

(B) an account of the extent, substance, and results of consultations with the Secretary respecting the prescription and implementation of regulations by the Administrator, and

(C) such recommendations for legislation and administrative action as the Administrator determines are necessary and desirable.

(3) The Administrator of Veterans' Affairs shall publish the report required by paragraph (2) in the Federal Register.

(Pub. L. 97-35, title IX, § 983, Aug. 13, 1981, 95 Stat. 601.)

#### CODIFICATION

Title 38, referred to in subsec. (b)(1), in the original read "subtitle 38", which for purposes of codification was translated as "title 38" as the probable intent of Congress.

## CHAPTER 108—NUCLEAR WASTE POLICY

Sec.
- 10101. Definitions.
- 10102. Separability of provisions.
- 10103. Territories and possessions.
- 10104. Ocean disposal.
- 10105. Limitation on spending authority.
- 10106. Protection of classified national security information.
- 10107. Applicability to atomic energy defense activities.
    - (a) Atomic energy defense activities.
    - (b) Evaluation by President.
    - (c) Applicability to certain repositories.
- 10108. Applicability to transportation.

### SUBCHAPTER I—DISPOSAL AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE, SPENT NUCLEAR FUEL, AND LOW-LEVEL RADIOACTIVE WASTE

Sec.
- 10121. State and affected Indian tribe participation in development of proposed repositories for defense waste.
    - (a) Notification to States and affected Indian tribes.
    - (b) Participation of States and affected Indian tribes.

#### PART A—REPOSITORIES FOR DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

- 10131. Findings and purposes.
- 10132. Recommendation of candidate sites for site characterization.
    - (a) Guidelines.
    - (b) Recommendation by Secretary to the President.
    - (c) Presidential review of recommended candidate sites.
    - (d) Continuation of candidate site screening.
    - (e) Preliminary activities.
    - (f) Timely site characterization.
- 10133. Site characterization.
    - (a) In general.
    - (b) Commission and States.
    - (c) Restrictions.
    - (d) Preliminary activities.
- 10134. Site approval and construction authorization.
    - (a) Hearings and Presidential recommendation.
    - (b) Submission of application.
    - (c) Status report on application.
    - (d) Commission action.
    - (e) Project decision schedule.
    - (f) Environmental impact statement.
- 10135. Review of repository site selection.
    - (a) "Resolution of repository siting approval" defined.
    - (b) State or Indian tribe petitions.
    - (c) Congressional review of petitions.
    - (d) Procedures applicable to the Senate.
    - (e) Procedures applicable to the House of Representatives.
    - (f) Computation of days.
    - (g) Information provided to Congress.
- 10136. Participation of States.
    - (a) Notification of States and affected tribes.
    - (b) State participation in repository siting decisions.
    - (c) Financial assistance.
    - (d) Additional notification and consultation.
- 10137. Consultation with States and affected Indian tribes.
    - (a) Provision of information.
    - (b) Consultation and cooperation.
    - (c) Written agreement.
- 10138. Participation of Indian tribes.
    - (a) Participation of Indian tribes in repository siting decisions.
    - (b) Financial assistance.
- 10139. Judicial review of agency actions.
    - (a) Jurisdiction of United States courts of appeals.
    - (c) Deadline for commencing action.
- 10140. Expedited authorizations.
    - (a) Issuance of authorizations.
    - (b) Terms of authorizations.
- 10141. Certain standards and criteria.
    - (a) Environmental Protection Agency standards.

Sec.
(b) Commission requirements and criteria.
(c) Environmental impact statement.
10142. Disposal of spent nuclear fuel.
10143. Title to material.
10144. Consideration of effect of acquisition of water rights.
10145. Termination of certain provisions.

PART B—INTERIM STORAGE PROGRAM

10151. Findings and purposes.
10152. Available capacity for interim storage of spent nuclear fuel.
10153. Interim at reactor storage.
10154. Licensing of facility expansions and transshipments.
(a) Oral argument.
(b) Adjudicatory hearing.
(c) Judicial review.
10155. Storage of spent nuclear fuel.
(a) Storage capacity.
(b) Contracts.
(c) Environmental review.
(d) Review of sites and State participation.
(e) Limitations.
(f) Report.
(g) Criteria for determining adequacy of available storage capacity.
(h) Application.
(i) Coordination with research and development program.
10156. Interim Storage Fund.
(a) Contracts.
(b) Limitation.
(c) Establishment of Interim Storage Fund.
(d) Use of Storage Fund.
(e) Impact assistance.
(f) Administration of Storage Fund.
10157. Transportation.

PART C—MONITORED RETRIEVABLE STORAGE

10161. Monitored retrievable storage.
(a) Findings.
(b) Submission of proposal by Secretary.
(c) Environmental impact statements.
(d) Licensing.
(e) Clarification.
(f) Impact assistance.
(g) Limitation.
(h) Participation of States and Indian tribes.

PART D—LOW-LEVEL RADIOACTIVE WASTE

10171. Financial arrangements for low-level radioactive waste site closure.
(a) Financial arrangements.
(b) Title and custody.
(c) Special sites.

SUBCHAPTER II—RESEARCH, DEVELOPMENT, AND DEMONSTRATION REGARDING DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

10191. Purpose.
10192. Applicability.
10193. Identification of sites.
(a) Guidelines.
(b) Site identification by Secretary.
10194. Siting research and related activities.
(a) In general.
(b) Public meetings and environmental assessment.
Sec.
(c) Restrictions.
(d) Title to material.
10195. Test and evaluation facility siting review and reports.
(a) Consultation and cooperation.
(b) Written agreements.
(c) Limitation.
10196. Federal agency actions.
(a) Cooperation and coordination.
(b) Environmental review.
10197. Research and development on disposal of high level radioactive waste.
(a) Purpose.
(b) Design.
(c) Operation.
(d) Use of existing Department facilities.
(e) Engineered barriers.
(f) Role of Commission.
(g) Environmental review.
(h) Limitations.
10198. Research and development on spent nuclear fuel.
(a) Demonstration and cooperative programs.
(b) Cooperative agreements.
(c) Dry storage research and development.
(d) Funding.
(e) Relation to spent nuclear fuel storage program.
10199. Payments to States and Indian tribes.
(a) Payments.
(b) Limitation.
10200. Study of research and development needs for monitored retrievable storage proposal.
10201. Judicial review.
10202. Research on alternatives for the permanent disposal of high level radioactive waste.
10203. Technical assistance to non-nuclear weapon states in the field of spent fuel storage and disposal.
(a) Statement of policy.
(b) Publication of joint notice, update.
(c) Notification to non-nuclear weapon states, expressions of interest.
(d) Funding requests.
(e) "Non-nuclear weapon state" defined.
(f) Unauthorized actions.

SUBCHAPTER III—OTHER PROVISIONS RELATING TO RADIOACTIVE WASTE

10221. Mission plan.
(a) Contents of mission plan.
(b) Submission of mission plan.
10222. Nuclear Waste Fund.
(a) Contracts.
(b) Advance contracting requirement.
(c) Establishment of Nuclear Waste Fund.
(d) Use of Waste Fund.
(e) Administration of Waste Fund.
10223. Alternative means of financing.
10224. Office of Civilian Radioactive Waste Management.
(a) Establishment.
(b) Functions of Director.
(c) Annual report to Congress.
(d) Annual audit by Comptroller General.
10225. Location of test and evaluation facility.
(a) Report to Congress.
(b) Procedures.
10226. Nuclear Regulatory Commission training authorization.

## § 10101. Definitions

For purposes of this chapter:

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "affected Indian tribe" means any Indian tribe—

(A) within whose reservation boundaries a monitored retrievable storage facility, test and evaluation facility, or a repository for high-level radioactive waste or spent fuel is proposed to be located;

(B) whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility: *Provided*, That the Secretary of the Interior finds, upon the petition of the appropriate governmental officials of the tribe, that such effects are both substantial and adverse to the tribe;[1]

(3) The term "atomic energy defense activity" means any activity of the Secretary performed in whole or in part in carrying out any of the following functions:

(A) naval reactors development;

(B) weapons activities including defense inertial confinement fusion;

(C) verification and control technology;

(D) defense nuclear materials production;

(E) defense nuclear waste and materials by-products management;

(F) defense nuclear materials security and safeguards and security investigations; and

(G) defense research and development.

(4) The term "candidate site" means an area, within a geologic and hydrologic system, that is recommended by the Secretary under section 10132 of this title for site characterization, approved by the President under section 10132 of this title for site characterization, or undergoing site characterization under section 10133 of this title.

(5) The term "civilian nuclear activity" means any atomic energy activity other than an atomic energy defense activity.

(6) The term "civilian nuclear power reactor" means a civilian nuclear powerplant required to be licensed under section 2133 or 2134(b) of this title.

(7) The term "Commission" means the Nuclear Regulatory Commission.

(8) The term "Department" means the Department of Energy.

(9) The term "disposal" means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste.

(10) The terms "disposal package" and "package" mean the primary container that holds, and is in contact with, solidified high-level radioactive waste, spent nuclear fuel, or other radioactive materials, and any overpacks that are emplaced at a repository.

(11) The term "engineered barriers" means manmade components of a disposal system designed to prevent the release of radionuclides into the geologic medium involved. Such term includes the high-level radioactive waste form, high-level radioactive waste canisters, and other materials placed over and around such canisters.

(12) The term "high-level radioactive waste" means—

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

(13) The term "Federal agency" means any Executive agency, as defined in section 105 of title 5.

(14) The term "Governor" means the chief executive officer of a State.

(15) The term "Indian tribe" means any Indian tribe, band, nation, or other organized group or community of Indians recognized as eligible for the services provided to Indians by the Secretary of the Interior because of their status as Indians, including any Alaska Native village, as defined in section 3(c) of the Alaska Native Claims Settlement Act (43 U.S.C. 1602(c)).

(16) The term "low-level radioactive waste" means radioactive material that—

(A) is not high-level radioactive waste, spent nuclear fuel, transuranic waste, or by-product material as defined in section 2014(e)(2) of this title; and

(B) the Commission, consistent with existing law, classifies as low-level radioactive waste.

(17) The term "Office" means the Office of Civilian Radioactive Waste Management established in section 10224[2] of this title.

(18) The term "repository" means any system licensed by the Commission that is intended to be used for, or may be used for, the permanent deep geologic disposal of high-level radioactive waste and spent nuclear fuel, whether or not such system is designed to permit the recovery, for a limited period during initial operation, of any materials placed in such system. Such term includes both surface and subsurface areas at which high-level radioactive waste and spent nuclear fuel handling activities are conducted.

(19) The term "reservation" means—

(A) any Indian reservation or dependent Indian community referred to in clause (a) or (b) of section 1151 of title 18; or

(B) any land selected by an Alaska Native village or regional corporation under the provisions of the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.).

(20) The term "Secretary" means the Secretary of Energy.

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[1] So in original. The semicolon probably should be a period.

[2] See References in Text note below.

(21) The term "site characterization" means—

(A) siting research activities with respect to a test and evaluation facility at a candidate site, and

(B) activities, whether in the laboratory or in the field, undertaken to establish the geologic condition and the ranges of the parameters of a candidate site relevant to the location of a repository, including borings, surface excavations, excavations of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing needed to evaluate the suitability of a candidate site for the location of a repository, but not including preliminary borings and geophysical testing needed to assess whether site characterization should be undertaken.

(22) The term "siting research" means activities, including borings, surface excavations, shaft excavations, subsurface lateral excavations and borings, and in situ testing, to determine the suitability of a site for a test and evaluation facility.

(23) The term "spent nuclear fuel" means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

(24) The term "State" means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and any other territory or possession of the United States.

(25) The term "storage" means retention of high-level radioactive waste, spent nuclear fuel, or transuranic waste with the intent to recover such waste or fuel for subsequent use, processing, or disposal.

(26) The term "Storage Fund" means the Interim Storage Fund established in section 10156(c)[3] of this title.

(27) The term "test and evaluation facility" means an at-depth, prototypic, underground cavity with subsurface lateral excavations extending from a central shaft that is used for research and development purposes, including the development of data and experience for the safe handling and disposal of solidified high-level radioactive waste, transuranic waste, or spent nuclear fuel.

(28) The term "unit of general local government" means any borough, city, county, parish, town, township, village, or other general purpose political subdivision of a State.

(29) The term "Waste Fund" means the Nuclear Waste Fund established in section 10222(c) of this title.

(Pub. L. 97-425, § 2, Jan. 7, 1983, 96 Stat. 2202.)

### REFERENCES IN TEXT

Section 10224 of this title, referred to in par. (17), was in the original a reference to section 305 of Pub. L. 97-425, which is classified to section 10225 of this title, and was translated as section 10224 of this title as the probable intent of Congress in view of the Office of Civilian Radioactive Waste Management being established by section 10224 of this title.

The Alaska Native Claims Settlement Act, referred to in par. (19)(B), is Pub. L. 92-203, Dec. 18, 1971, 85 Stat. 688, as amended, which is classified generally to chapter 33 (§ 1601 et seq.) of Title 43, Public Lands. For complete classification of this Act to the Code, see Short Title note set out under section 1601 of Title 43 and Tables.

Section 10156(c) of this title, referred to in par. (26), was in the original a reference to section 137(c) of Pub. L. 97-425, which is classified to section 10157(c) of this title, and has been translated as section 10156(c) of this title as the probable intent of Congress in view of the Interim Storage Fund being established by section 10156(c) of this title.

### SHORT TITLE

Section 1 of Pub. L. 97-425 provided that: "This Act [enacting this chapter] may be cited as the 'Nuclear Waste Policy Act of 1982'."

### § 10102. Separability of provisions

If any provision of this chapter, or the application of such provision to any person or circumstance, is held invalid, the remainder of this chapter, or the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

(Pub. L. 97-425, § 3, Jan. 7, 1983, 96 Stat. 2205.)

### § 10103. Territories and possessions

Nothing in this chapter shall be deemed to repeal, modify, or amend the provisions of section 1491 of title 48.

(Pub. L. 97-425, § 4, Jan. 7, 1983, 96 Stat. 2205.)

### § 10104. Ocean disposal

Nothing in this chapter shall be deemed to affect the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1401 et seq.).

(Pub. L. 97-425, § 5, Jan. 7, 1983, 96 Stat. 2205.)

### REFERENCES IN TEXT

The Marine Protection, Research, and Sanctuaries Act of 1972, referred to in text, is Pub. L. 92-532, Oct. 23, 1972, 86 Stat. 1052, as amended, which is classified principally to chapter 27 (§ 1401 et seq.) of Title 33, Navigation and Navigable Waters. For complete classification of this Act to the Code, see Short Title note set out under section 1401 of Title 33 and Tables.

### § 10105. Limitation on spending authority

The authority under this chapter to incur indebtedness, or enter into contracts, obligating amounts to be expended by the Federal Government shall be effective for any fiscal year only to such extent or in such amounts as are provided in advance by appropriation Acts.

(Pub. L. 97-425, § 6, Jan. 7, 1983, 96 Stat. 2205.)

### § 10106. Protection of classified national security information

Nothing in this chapter shall require the release or disclosure to any person or to the Commission of any classified national security information.

(Pub. L. 97-425, § 7, Jan. 7, 1983, 96 Stat. 2205.)

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[3] See References in Text note below.

### § 10107. Applicability to atomic energy defense activities

**(a) Atomic energy defense activities**

Subject to the provisions of subsection (c) of this section, the provisions of this chapter shall not apply with respect to any atomic energy defense activity or to any facility used in connection with any such activity.

**(b) Evaluation by President**

(1) Not later than 2 years after January 7, 1983, the President shall evaluate the use of disposal capacity at one or more repositories to be developed under part A of subchapter I of this chapter for the disposal of high-level radioactive waste resulting from atomic energy defense activities. Such evaluation shall take into consideration factors relating to cost efficiency, health and safety, regulation, transportation, public acceptability, and national security.

(2) Unless the President finds, after conducting the evaluation required in paragraph (1), that the development of a repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only is required, taking into account all of the factors described in such subsection, the Secretary shall proceed promptly with arrangement for the use of one or more of the repositories to be developed under part A of subchapter I of this chapter for the disposal of such waste. Such arrangements shall include the allocation of costs of developing, constructing, and operating this repository or repositories. The costs resulting from permanent disposal of high-level radioactive waste from atomic energy defense activities shall be paid by the Federal Government, into the special account established under section 10222 of this title.

(3) Any repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only shall (A) be subject to licensing under section 5842 of this title; and (B) comply with all requirements of the Commission for the siting, development, construction, and operation of a repository.

**(c) Applicability to certain repositories**

The provisions of this chapter shall apply with respect to any repository not used exclusively for the disposal of high-level radioactive waste or spent nuclear fuel resulting from atomic energy defense activities, research and development activities of the Secretary, or both.

(Pub. L. 97-425, § 8, Jan. 7, 1983, 96 Stat. 2205.)

#### Section Referred to in Other Sections

This section is referred to in sections 10121, 10155, 10192 of this title.

### § 10108. Applicability to transportation

Nothing in this chapter shall be construed to affect Federal, State, or local laws pertaining to the transportation of spent nuclear fuel or high-level radioactive waste.

(Pub. L. 97-425, § 9, Jan. 7, 1983, 96 Stat. 2206.)

## SUBCHAPTER I—DISPOSAL AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE, SPENT NUCLEAR FUEL, AND LOW-LEVEL RADIOACTIVE WASTE

#### Subchapter Referred to in Other Sections

This subchapter is referred to in sections 10222, 10225 of this title.

### § 10121. State and affected Indian tribe participation in development of proposed repositories for defense waste

**(a) Notification to States and affected Indian tribes**

Notwithstanding the provisions of section 10107 of this title, upon any decision by the Secretary or the President to develop a repository for the disposal of high-level radioactive waste or spent nuclear fuel resulting exclusively from atomic energy defense activities, research and development activities of the Secretary, or both, and before proceeding with any site-specific investigations with respect to such repository, the Secretary shall notify the Governor and legislature of the State in which such repository is proposed to be located, or the governing body of the affected Indian tribe on whose reservation such repository is proposed to be located, as the case may be, of such decision.

**(b) Participation of States and affected Indian tribes**

Following the receipt of any notification under subsection (a) of this section, the State or Indian tribe involved shall be entitled, with respect to the proposed repository involved, to rights of participation and consultation identical to those provided in sections 10135 through 10138 of this title, except that any financial assistance authorized to be provided to such State or affected Indian tribe under section 10136(c) or 10138(b) of this title shall be made from amounts appropriated to the Secretary for purposes of carrying out this section.

(Pub. L. 97-425, title I, § 101, Jan. 7, 1983, 96 Stat. 2206.)

## Part A—Repositories for Disposal of High-Level Radioactive Waste and Spent Nuclear Fuel

#### Part Referred to in Other Sections

This part is referred to in section 10107 of this title.

### § 10131. Findings and purposes

(a) The Congress finds that—

(1) radioactive waste creates potential risks and requires safe and environmentally acceptable methods of disposal;

(2) a national problem has been created by the accumulation of (A) spent nuclear fuel from nuclear reactors; and (B) radioactive waste from (i) reprocessing of spent nuclear fuel; (ii) activities related to medical research, diagnosis, and treatment; and (iii) other sources;

(3) Federal efforts during the past 30 years to devise a permanent solution to the problems of civilian radioactive waste disposal have not been adequate;

(4) while the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such spent nuclear fuel as may be disposed of in order to protect the public health and safety and the environment, the costs of such disposal should be the responsibility of the generators and owners of such waste and spent fuel;

(5) the generators and owners of high-level radioactive waste and spent nuclear fuel have the primary responsibility to provide for, and the responsibility to pay the costs of, the interim storage of such waste and spent fuel until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this chapter;

(6) State and public participation in the planning and development of repositories is essential in order to promote public confidence in the safety of disposal of such waste and spent fuel; and

(7) high-level radioactive waste and spent nuclear fuel have become major subjects of public concern, and appropriate precautions must be taken to ensure that such waste and spent fuel do not adversely affect the public health and safety and the environment for this or future generations.

(b) The purposes of this part are—

(1) to establish a schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository;

(2) to establish the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel;

(3) to define the relationship between the Federal Government and the State governments with respect to the disposal of such waste and spent fuel; and

(4) to establish a Nuclear Waste Fund, composed of payments made by the generators and owners of such waste and spent fuel, that will ensure that the costs of carrying out activities relating to the disposal of such waste and spent fuel will be borne by the persons responsible for generating such waste and spent fuel.

(Pub. L. 97-425, title I, § 111, Jan. 7, 1983, 96 Stat. 2207.)

### § 10132. Recommendation of candidate sites for site characterization

#### (a) Guidelines

Not later than 180 days after January 7, 1983, the Secretary, following consultation with the Council on Environmental Quality, the Administrator of the Environmental Protection Agency, the Director of the Geological Survey, and interested Governors, and the concurrence of the Commission shall issue general guidelines for the recommendation of sites for repositories. Such guidelines shall specify detailed geologic considerations that shall be primary criteria for the selection of sites in various geologic media. Such guidelines shall specify factors that qualify or disqualify any site from development as a repository, including factors pertaining to the location of valuable natural resources, hydrology, geophysics, seismic activity, and atomic energy defense activities, proximity to water supplies, proximity to populations, the effect upon the rights of users of water, and proximity to components of the National Park System, the National Wildlife Refuge System, the National Wild and Scenic Rivers System, the National Wilderness Preservation System, or National Forest Lands. Such guidelines shall take into consideration the proximity to sites where high-level radioactive waste and spent nuclear fuel is generated or temporarily stored and the transportation and safety factors involved in moving such waste to a repository. Such guidelines shall specify population factors that will disqualify any site from development as a repository if any surface facility of such repository would be located (1) in a highly populated area, or (2) adjacent to an area 1 mile by 1 mile having a population of not less than 1,000 individuals. Such guidelines also shall require the Secretary to consider the cost and impact of transporting to the repository site the solidified high-level radioactive waste and spent fuel to be disposed of in the repository and the advantages of regional distribution in the siting of repositories. Such guidelines shall require the Secretary to consider the various geologic media in which sites for repositories may be located and, to the extent practicable, to recommend sites in different geologic media. The Secretary shall use guidelines established under this subsection in considering candidate sites for recommendation under subsection (b) of this section. The Secretary may revise such guidelines from time to time, consistent with the provisions of this subsection.

#### ~~(b) Recommendation by Secretary to the President~~

(1)(A) Following the issuance of guidelines under subsection (a) of this section and consultation with the Governors of affected States, the Secretary shall nominate at least 5 sites that he determines suitable for site characterization for selection of the first repository site.

(B) Subsequent to such nomination, the Secretary shall recommend to the President 3 of the nominated sites not later than January 1, 1985 for characterization as candidate sites.

(C) Not later than July 1, 1989, the Secretary shall nominate 5 sites which shall include at least 3 additional sites not nominated under subparagraph (A), and recommend by such date to the President from such 5 nominated sites 3 candidate sites the Secretary determines suitable for site characterization for selection of the second repository. The Secretary may not nominate any site previously nominated under subparagraph (A), that was not recommended as a candidate site under subparagraph (B).

(D) Such recommendations under subparagraphs (B) and (C) shall be consistent with the provisions of section 10225 of this title.

(E) Each nomination of a site under this sub~~section shall be accompanied by an environ-~~

~~mental assessment which shall include a de-~~tailed statement of the basis for such recommendation and of the probable impacts of the site characterization activities planned for such site, and a discussion of alternative activities relating to site characterization that may be undertaken to avoid such impacts. Such environmental assessment shall include—

(i) an evaluation by the Secretary as to whether such site is suitable for site characterization under the guidelines established under subsection (a) of this section;

(ii) an evaluation by the Secretary as to whether such site is suitable for development as a repository under each such guideline that does not require site characterization as a prerequisite for application of such guideline;

(iii) an evaluation by the Secretary of the effects of the site characterization activities at such site on the public health and safety and the environment;

(iv) a reasonable comparative evaluation by the Secretary of such site with other sites and locations that have been considered;

(v) a description of the decision process by which such site was recommended; and

(vi) an assessment of the regional and local impacts of locating the proposed repository at such site.

(F)(i) The issuance of any environmental assessment under this paragraph shall be considered to be a final agency action subject to judicial review in accordance with the provisions of chapter 7 of title 5 and section 10139 of this title. Such judicial review shall be limited to the sufficiency of such environmental assessment with respect to the items described in clauses (i) through (vi) of subparagraph (E).

(G) Each environmental assessment prepared under this paragraph shall be made available to the public.

(H) Before nominating a site, the Secretary shall notify the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, of such ~~nomination and the basis for such nomination.~~

(2) Before nominating any site the Secretary shall hold public hearings in the vicinity of such site to inform the residents of the area in which such site is located of the proposed nomination of such site and to receive their comments. At such hearings, the Secretary shall also solicit and receive any recommendations of such residents with respect to issues that should be addressed in the environmental assessment described in paragraph (1) and the site characterization plan described in section 10133(b)(1) of this title.

(3) In evaluating the sites nominated under this section prior to any decision to recommend a site as a candidate site, the Secretary shall use available geophysical, geologic, geochemical and hydrologic, and other information and shall not conduct any preliminary borings or excavations at a site unless (i) such preliminary boring or excavation activities were in progress on January 7, 1983, or (ii) the Secretary certifies that such available information from other sources, in the absence of preliminary borings or excavations, will not be adequate to satisfy applicable requirements of this chapter or any other law: *Provided*, That preliminary borings or excavations under this section shall not exceed a diameter of 6 inches.

### (c) Presidential review of recommended candidate sites

(1) The President shall review each candidate site recommendation made by the Secretary under subsection (b) of this section. Not later than 60 days after the submission by the Secretary of a recommendation of a candidate site, the President, in his discretion, may either approve or disapprove such candidate site, and shall transmit any such decision to the Secretary and to either the Governor and legislature of the State in which such candidate site is located, or the governing body of the affected Indian tribe where such candidate site is located, as the case may be. If, during such 60-day period, the President fails to approve or disapprove such candidate site, or fails to invoke his authority under paragraph (2) to delay his decision, such candidate site shall be considered to be approved, and the Secretary shall notify such Governor and legislature, or governing body of the affected Indian tribe, of the approval of such candidate site by reason of the inaction of the President.

(2) The President may delay for not more than 6 months his decision under paragraph (1) to approve or disapprove a candidate site, upon determining that the information provided with the recommendation of the Secretary is insufficient to permit a decision within the 60-day period referred to in paragraph (1). The President may invoke his authority under this paragraph by submitting written notice to the Congress, within such 60-day period, of his intent to invoke such authority. If the President invokes such authority, but fails to approve or disapprove the candidate site involved by the end of such 6-month period, such candidate site shall be considered to be approved, and the Secretary shall notify such Governor and legislature, or governing body of the affected Indian tribe, of the approval of such candidate site by reason of the inaction of the President.

### ~~(d) Continuation of candidate site screening~~

After the required recommendation of candidate sites under subsection (b) of this section, the Secretary may continue, as he determines necessary, to identify and study other sites to determine their suitability for recommendation for site characterization, in accordance with the ~~procedures described in this section.~~

### ~~(e) Preliminary activities~~

Except as otherwise provided in this section, each activity of the President or the Secretary under this section shall be considered to be a preliminary decisionmaking activity. No such activity shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to require any environmental review under subparagraph ~~(E) or (F) of section 102(2) of such Act.~~

~~(f) Timely site characterization~~

Nothing in this section may be construed as prohibiting the Secretary from continuing ongoing or presently planned site characterization at any site on Department of Energy land for which the location of the principal borehole has been approved by the Secretary by August 1, 1982, except that (1) the environmental assessment described in subsection (b)(1) of this section shall be prepared and made available to the public before proceeding to sink shafts at any such site, and (2) the Secretary shall not continue site characterization at any such site unless such site is among the candidate sites recommended by the Secretary under the first sentence of subsection (b) of this section for site characterization and approved by the President under subsection (c) of this section; and (3) the Secretary shall conduct public hearings under section 10133(b)(2) of this title and comply with requirements under section 10137 of this title within one year of January 7, 1983.

(Pub. L. 97-425, title I, § 112, Jan. 7, 1983, 96 Stat. 2208.)

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10101, 10133, 10134, 10136, 10137, 10138, 10139, 10161, 10221 of this title.

### § 10133. Site characterization

**(a) In general**

The Secretary shall carry out, in accordance with the provisions of this section, appropriate site characterization activities beginning with the candidate sites that have been approved under section 10132 of this title and are located in various geologic media. The Secretary shall consider fully the comments received under subsection (b)(2) of this section and section 10132(b)(2) of this title and shall, to the maximum extent practicable and in consultation with the Governor of the State involved or the governing body of the affected Indian tribe involved, conduct site characterization activities in a manner that minimizes any significant adverse environmental impacts identified in such comments or in the environmental assessment submitted under subsection (b)(1) of this section.

**(b) Commission and States**

(1) Before proceeding to sink shafts at any candidate site, the Secretary shall submit for such candidate site to the Commission and to either the Governor and legislature of the State in which such candidate site is located, or the governing body of the affected Indian tribe on whose reservation such candidate site is located, as the case may be, for their review and ~~comment—~~

(A) a general plan for site characterization activities to be conducted at such candidate site, which plan shall include—

(i) a description of such candidate site;

(ii) a description of such site characterization activities, including the following: the extent of planned excavations, plans for any onsite testing with radioactive or nonradioactive material, plans for any investigation activities that may affect the capability of such candidate site to isolate high-level radioactive waste and spent nuclear fuel, and plans to control any adverse, safety-related impacts from such site characterization activities;

(iii) plans for the decontamination and decommissioning of such candidate site, and for the mitigation of any significant adverse environmental impacts caused by site characterization activities if it is determined unsuitable for application for a construction authorization for a repository;

(iv) criteria to be used to determine the suitability of such candidate site for the location of a repository, developed pursuant to section 10132(a) of this title; and

(v) any other information required by the Commission;

(B) a description of the possible form or packaging for the high-level radioactive waste and spent nuclear fuel to be emplaced in such repository, a description, to the extent practicable, of the relationship between such waste form or packaging and the geologic medium of such site, and a description of the activities being conducted by the Secretary with respect to such possible waste form or packaging or such relationship; and

(C) a conceptual repository design that takes into account likely site-specific requirements.

~~(2) Before proceeding to sink shafts at any~~ candidate site, the Secretary shall (A) make available to the public the site characterization plan described in paragraph (1), and (B) hold public hearings in the vicinity of such candidate site to inform the residents of the area in which such candidate site is located of such plan, and to receive their comments.

(3) During the conduct of site characterization activities at a candidate site, the Secretary shall report not less than once every 6 months to the Commission and to either the Governor and legislature of the State in which such candidate site is located, or the governing body of the affected Indian tribe where such candidate site is located, as the case may be, on the nature and extent of such activities and the information developed from such activities.

**(c) Restrictions**

(1) The Secretary may conduct at any candidate site only such site characterization activities as the Secretary considers necessary to provide the data required for evaluation of the suitability of such candidate site for an application to be submitted to the Commission for a construction authorization for a repository at such candidate site, and for compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(2) In conducting site characterization activities—

(A) the Secretary may not use any radioactive material at a candidate site unless the Commission concurs that such use is necessary to provide data for the preparation of ~~the required environmental reports and an~~

~~application for a construction authorization~~ for a repository at such candidate site, and

(B) if any radioactive material is used at a candidate site—

(i) the Secretary shall use the minimum quantity necessary to determine the suitability of such candidate site for a repository, but in no event more than the curie equivalent of 10 metric tons of spent nuclear fuel, and

(ii) such radioactive material shall be fully retrievable.

(3) If site characterization activities are terminated at a candidate site for any reason, the Secretary shall (A) notify the Congress, the Governors and legislatures of all States in which candidate sites are located, and the governing bodies of all affected Indian tribes where candidate sites are located, of such termination and the reasons for such termination, and (B) remove any high-level radioactive waste, spent nuclear fuel, or other radioactive materials at or in such candidate site as promptly as practicable.

(4) If a site is determined to be unsuitable for application for a construction authorization for a repository, the Secretary shall take reasonable and necessary steps to reclaim the site and to mitigate any significant adverse environmental impacts caused by site characterization ~~activities.~~

**(d) Preliminary activities**

Each activity of the Secretary under this section that is in compliance with the provisions of subsection (c) of this section shall be considered a preliminary decisionmaking activity. No such activity shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to [1] require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act.

(Pub. L. 97-425, title I, § 113, Jan. 7, 1983, 96 Stat. 2211.)

REFERENCES IN TEXT

The National Environmental Policy Act of 1969, referred to in subsec. (c)(1), is Pub. L. 91-190, Jan. 1, 1970, 83 Stat. 852, as amended, which is classified generally to chapter 55 (§ 4321 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 4321 of this title and Tables.

~~SECTION REFERRED TO IN OTHER SECTIONS~~

This section is referred to in sections 10101, 10132, 10134 of this title.

### § 10134. Site approval and construction authorization

**(a) Hearings and Presidential recommendation**

(1) The Secretary shall hold public hearings in the vicinity of each site under consideration for recommendation to the President under this paragraph as a site for the development of a repository, for the purposes of informing the residents of the area in which such site is located of such consideration and receiving their comments regarding the possible recommenda~~tion of such site. If, upon completion of such~~ hearings and completion of site characterization activities at not less than 3 candidate sites for the first proposed repository, or from all of the characterized sites for the development of subsequent respositories, under section 10133 of this title, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 10133 of this title and this section, including the information described in subparagraph (A) through subparagraph (G). In making site recommendations and approvals subsequent to the first site recommendation, the Secretary and the President, respectively, shall also consider the need for regional distribution of repositories and the need to minimize, to the extent practicable, the impacts and cost of transporting spent fuel and solidified high-level radioactive waste. Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including ~~the following~~:

(A) a description of the proposed repository, including preliminary engineering specifications for the facility;

(B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;

(C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;

~~(D) a final environmental~~ impact statement prepared pursuant to subsection (f) of this section and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), including an analysis of the consideration given by the Secretary to not less than 3 candidate sites for the first proposed respository [1] or to all of the characterized sites for the development of subsequent repositories, with respect to which site characterization is completed under section 10133 of this title, together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that any such environmental impact statement concerning the first repository to be developed under this chapter shall not be required to consider the need for a repository or the alternatives to geologic dispos~~al;~~

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[1] So in original. The word "to" probably should not appear.

[1] So in original. Probably should be "repository".

(E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository.

(F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

(G) such other information as the Secretary considers appropriate, and

~~(H) any impact report submitted under sec~~tion 10136(c)(2)(B) of this title by the State in which such site is located, or under section 10138(b)(3)(B) of this title by the affected Indian tribe where such site is located, as the case may be.

(2)(A) Not later than March 31, 1987, the President shall submit to the Congress a recommendation of one site from the three sites initially characterized that the President considers qualified for application for a construction authorization for a repository. Not later than March 31, 1990, the President shall submit to the Congress a recommendation of a second site from any sites already characterized that the President considers qualified for a construction authorization for a second repository. The President shall submit with such recommendation a copy of the report for such site prepared by the Secretary under paragraph (1). After submission of the second such recommendation, the President may submit to the Congress recommendations for other sites, in accorance[1] with the provisions of this part.

(B) The President may extend the deadlines described in subparagraph (A) by not more than 12 months if, before March 31, 1986, for the first site, and March 31, 1989, for the second site, (i) the President determines that such extension is necessary; and (ii) transmits to the Congress a report setting forth the reasons for such extension.

(3) If approval of any such site recommendation does not take effect as a result of a disapproval by the Governor or legislature of a State under section 10136 of this title or the governing body of an affected Indian tribe under section 10138 of this title, the President shall submit to the Congress, not later than 1 year after the disapproval of such recommendation, a recommendation of another site for the first or subsequent repository.

(4)(A) The President may not recommend the approval of any site under this subsection unless the Secretary has recommended to the President under paragraph (1) approval of such site and has submitted to the President a report for such site as required under such paragraph.

(B) No recommendation of a site by the President under this subsection shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. ~~4332(2)(C)), or to[2] require any environmental review under subparagraph (E) or (F) of section~~ 102(2) of such Act.

### (b) Submission of application

If the President recommends to the Congress a site for a repository under subsection (a) of this section and the site designation is permitted to take effect under section 10135 of this title, the Secretary shall submit to the Commission an application for a construction authorization for a repository at such site not later than 90 days after the date on which the recommendation of the site designation is effective under such section and shall provide to the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, a copy of such appli~~cation.~~

### (c) Status report on application

Not later than 1 year after the date on which an application for a construction authorization is submitted under subsection (b) of this section, and annually thereafter until the date on which such authorization is granted, the Commission shall submit a report to the Congress describing the proceedings undertaken through the date of such report with regard to such application, including a description of—

(1) any major unresolved safety issues, and the explanation of the Secretary with respect to design and operation plans for resolving such issues;

(2) any matters of contention regarding such application; and

(3) any Commission actions regarding the granting or denial of such authorization.

### ~~(d) Commission action~~

The Commission shall consider an application for a construction authorization for all or part of a repository in accordance with the laws applicable to such applications, except that the Commission shall issue a final decision approving or disapproving the issuance of a construction authorization not later than—

(1) January 1, 1989, for the first such application, and January 1, 1992, for the second such application; or

(2) the expiration of 3 years after the date of the submission of such application, except that the Commission may extend such deadline by not more than 12 months if, not less than 30 days before such deadline, the Commission complies with the reporting requirements established in subsection (e)(2) of this section;

whichever occurs later. The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to part C of this subchapter, shall be located, or is planned to be located, ~~within 50 miles of the first repository, then the~~

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[1] So in original. Probably should be "accordance".

[2] So in original. The word "to" probably should not appear.

~~Commission decision approving the first~~ such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository is in operation.

**(e) Project decision schedule**

(1) The Secretary shall prepare and update, as appropriate, in cooperation with all affected Federal agencies, a project decision schedule that portrays the optimum way to attain the operation of the repository involved, within the time periods specified in this part. Such schedule shall include a description of objectives and a sequence of deadlines for all Federal agencies required to take action, including an identification of the activities in which a delay in the start, or completion, of such activities will cause ~~a delay in beginning repository operation.~~

(2) Any Federal agency that determines that it cannot comply with any deadline in the project decision schedule, or fails to so comply, shall submit to the Secretary and to the Congress a written report explaining the reason for its failure or expected failure to meet such deadline, the reason why such agency could not reach an agreement with the Secretary, the estimated time for completion of the activity or activities involved, the associated effect on its other deadlines in the project decision schedule, and any recommendations it may have or actions it intends to take regarding any improvements in its operation or organization, or changes to its statutory directives or authority, so that it will be able to mitigate the delay involved. The Secretary, within 30 days after receiving any such report, shall file with the Congress his response to such report, including the reasons why the Secretary could not amend the project decision schedule to accommodate the Federal agency involved.

~~**(f) Environmental impact statement**~~

Any recommendation made by the Secretary under this section shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). A final environmental impact statement prepared by the Secretary under such Act shall accompany any recommendation to the President to approve a site for a repository. With respect to the requirements imposed by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), compliance with the procedures and requirements of this chapter shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to the isolation of high-level radioactive waste and spent nuclear fuel in a repository. For purposes of complying with the requirements of the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.] and this section, the Secretary shall consider as alternate sites for the first repository to be developed under this part 3 candidate sites with re~~spect to which (1) site characterization has been completed under section 10133 of this~~ title, and (2) the Secretary has made a preliminary determination, that such sites are suitable for development as respositories[1] consistent with the guidelines promulgated under section 10132(a) of this title. The Secretary shall consider as alternative sites for subsequent repositories at least three of the remaining sites recommended by the Secretary by January 1, 1985, and by July 1, 1989, pursuant to section 10132(b) of this title and approved by the President for site characterization pursuant to section 10132(c) of this title for which (1) site characterization has been completed under section 10133 of this title, and (2) the Secretary has made a preliminary determination that such sites are suitable for development as respositories[1] consistent with the guidelines promulgated under section 10132(a) of this title. Any environmental impact statement prepared in connection with a repository proposed to be constructed by the Secretary under this part shall, to the extent practicable, be adopted by the Commission in connection with the issuance by the Commission of a construction authorization and license for such repository. To the extent such statement is adopted by the Commission, such adoption shall be deemed to also satisfy the responsibilities of the Commission under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and no further consideration shall be required, except that nothing in this subsection shall affect any independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). Nothing in this chapter shall be construed to amend or otherwise detract from the licensing requirements of the Nucler[2] Regulatory Commission as established in title II of the Energy Reorganization Act of 1974 (Public Law 93-438) [42 U.S.C. 5841 et seq.]. In any such statement prepared with respect to the first repository to be constructed under this part, the need for a repository or nongeologic alternatives to the site of such repository shall not be ~~considered.~~

(Pub. L. 97-425, title I, § 114, Jan. 7, 1983, 96 Stat. 2213.)

### REFERENCES IN TEXT

The National Environmental Policy Act of 1969, referred to in subsecs. (a)(1)(D) and (f), is Pub. L. 91-190, Jan. 1, 1970, 83 Stat. 852, as amended, which is classified generally to chapter 55 (§ 4321 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 4321 of this title and Tables.

The Atomic Energy Act of 1954, referred to in subsec. (f), is act Aug. 30, 1954, ch. 1073, 68 Stat. 921, as amended, which is classified generally to chapter 23 (§ 2011 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 2011 of this title and Tables.

The Energy Reorganization Act of 1974, referred to in subsec. (f), is Pub. L. 93-438, Oct. 11, 1974, 88 Stat. 1233, as amended. Title II of the Energy Reorganization Act of 1974 is classified generally to subchapter II (§ 5841 et seq.) of chapter 73 of this title. For complete

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[1] So in original. Probably should be "repositories".

[2] So in original. Probably should be "Nuclear".

### SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10121, 10134, 10136, 10138, 10155, 10161, 10225 of this title.

### § 10136. Participation of States

#### (a) Notification of States and affected tribes

The Secretary shall identify the States with one or more potentially acceptable sites for a repository within 90 days after January 7, 1983. Within 90 days of such identification, the Secretary shall notify the Governor, the State legislature, and the tribal council of any affected Indian tribe in any State of the potentially acceptable sites within such State. For the purposes of this subchapter, the term "potentially acceptable site" means any site at which, after geologic studies and field mapping but before detailed geologic data gathering, the Department undertakes preliminary drilling and geophysical testing for the definition of site location.

#### (b) State participation in repository siting decisions

(1) Unless otherwise provided by State law, the Governor or legislature of each State shall have authority to submit a notice of disapproval to the Congress under paragraph (2). In any case in which State law provides for submission of any such notice of disapproval by any other person or entity, any reference in this part to the Governor or legislature of such State shall be considered to refer instead to such other person or entity.

(2) Upon the submission by the President to the Congress of a recommendation of a site for a repository, the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval. Such Governor or legislature may submit such a notice of disapproval to the Congress not later than the 60 days after the date that the President recommends such site to the Congress under section 10134 of this title. A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate. Such notice of disapproval shall be accompanied by a statement of reasons explaining why such Governor or legislature disapproved the recommended repository site involved.

(3) The authority of the Governor or legislature of each State under this subsection shall not be applicable with respect to any site located on a reservation.

#### ~~(c) Financial assistance~~

(1)(A) The Secretary shall make grants to each State notified under subsection (a) of this section for the purpose of participating in activities required by this section and section 10137 of this title or authorized by written agreement entered into pursuant to section 10137(c) of this title. Any salary or travel expense that would ordinarily be incurred by such State, or by any political subdivision of such State, may not be considered eligible for funding under this paragraph.

(B) The Secretary shall make grants to each ~~State in which a candidate site for a repository is approved under section 10132(c) of this title.~~ Such grants may be made to each such State only for purposes of enabling such State—

(i) to review activities taken under this part with respect to such site for purposes of determining any potential economic, social, public health and safety, and environmental impacts of such repository on the State and its residents;

(ii) to develop a request for impact assistance under paragraph (2);

(iii) to engage in any monitoring, testing, or evaluation activities with respect to site characterization programs with regard to such site;

(iv) to provide information to its residents regarding any activities of such State, the Secretary, or the Commission with respect to such site; and

(v) to request information from, and make comments and recommendations to, the Secretary regarding any activities taken under this part with respect to such site.

(C) Any salary or travel expense that would ordinarily be incurred by such State, or by any political subdivision of such State, may not be considered eligible for funding under this paragraph.

(2)(A) The Secretary shall provide financial and technical assistance to any State requesting such assistance in which there is a site with respect to which the Commission has authorized construction of a repository. Such assistance shall be designed to mitigate the impact on such State of the development of such repository. Such assistance to such State shall commence within 6 months following the granting by the Commission of a construction authorization for such repository and following the initiation of construction activities at such site.

(B) Any State desiring assistance under this paragraph shall prepare and submit to the Secretary a report on any economic, social, public health and safety, and environmental impacts that are likely as a result of the development of a repository at a site in such State. Such report shall be submitted to the Secretary following the completion of site characterization activities at such site and before the recommendation of such site to the President by the Secretary for application for a construction authorization for a repository. As soon as practicable following the granting of a construction authorization for such repository, the Secretary shall seek to enter into a binding agreement with the State involved setting forth the amount of assistance to be provided to such State under this paragraph and the procedures to be followed in providing such assistance.

(3) The Secretary shall also grant to each State and unit of general local government in which a site for a repository is approved under section 10132(c) of this title an amount each fiscal year equal to the amount such State and unit of general local government, respectively, would receive were they authorized to tax site characterization activities at such site, and the development and operation of such repository, ~~as such State and unit of general local govern-~~

~~ment (as the other real property and industrial activities occurring within such State and unit of general local government. Such grants shall continue until such time as all such activities, development, and operation are terminated at such site.~~

~~(4)(A) A State may not receive any grant under paragraph (1) after the expiration of the 1-year period following—~~

~~(i) the date on which the Secretary notifies the Governor and legislature of the State involved of the termination of site characterization activities at the candidate site involved in such State;~~

~~(ii) the date on which the site in such State is disapproved under section 10135 of this title; or~~

~~(iii) the date on which the Commission disapproves an application for a construction authorization for a repository at such site;~~

~~whichever occurs first, unless there is another candidate site in the State approved under section 10132(c) of this title with respect to which the actions described in clauses (i), (ii), and (iii) have not been taken.~~

~~(B) A State may not receive any further assistance under paragraph (2) with respect to a site if repository construction activities at such site are terminated by the Secretary or if such activities are permanently enjoined by any court.~~

~~(C) At the end of the 2-year period beginning on the effective date of any license to receive and possess for a repository in a State, no Federal funds shall be made available to such State under paragraph (1) or (2), except for—~~

~~(i) such funds as may be necessary to support State activities related to any other repository located in, or proposed to be located in, such State, and for which a license to receive and possess has not been in effect for more than 1 year; and~~

~~(ii) such funds as may be necessary to support State activities pursuant to agreements or contracts for impact assistance entered into, under paragraph (2), by such State with the Secretary during such 2-year period.~~

~~(5) Financial assistance authorized in this subsection shall be made out of amounts held in the Nuclear Waste Fund established in section 10222 of this title.~~

**(d) Additional notification and consultation**

Whenever the Secretary is required under any provision of this chapter to notify or consult with the governing body of an affected Indian tribe where a site is located, the Secretary shall also notify or consult with, as the case may be, the Governor of the State in which such reservation is located.

(Pub. L. 97-425, title I, § 116, Jan. 7, 1983, 96 Stat. 2220.)

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10121, 10134, 10135, 10137, 10138, 10161, 10222 of this title.

### § 10137. Consultation with States and affected Indian tribes

**(a) Provision of information**

(1) The Secretary, the Commission, and other agencies involved in the construction, operation, or regulation of any aspect of a repository in a State shall provide to the Governor and legislature of such State, and to the governing body of any affected Indian tribe, timely and complete information regarding determinations or plans made with respect to the site characterization siting, development, design, licensing, construction, operation, regulation, or decommissioning of such repository.

(2) Upon written request for such information by the Governor or legislature of such State, or by the governing body of any affected Indian tribe, as the case may be, the Secretary shall provide a written response to such request within 30 days of the receipt of such request. Such response shall provide the information requested or, in the alternative, the reasons why the information cannot be so provided. If the Secretary fails to so respond within such 30 days, the Governor or legislature of such State, or the governing body of any affected Indian tribe, as the case may be, may transmit a formal written objection to such failure to respond to the President. If the President or Secretary fails to respond to such written request within 30 days of the receipt by the President of such formal written objection, the Secretary shall immediately suspend all activities in such State authorized by this part, and shall not renew such activities until the Governor or legislature of such State, or the governing body of any affected Indian tribe, as the case may be, has received the written response to such written request required by this subsection.

**(b) Consultation and cooperation**

In performing any study of an area within a State for the purpose of determining the suitability of such area for a repository pursuant to section 10132(c) of this title, and in subsequently developing and loading[1] any repository within such State, the Secretary shall consult and cooperate with the Governor and legislature of such State and the governing body of any affected Indian tribe in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository. In carrying out his duties under this part, the Secretary shall take such concerns into account to the maximum extent feasible and as specified in written agreements entered into under subsection (c) of this section.

**(c) Written agreement**

Not later than 60 days after (1) the approval of a site for site characterization for such a repository under section 10132(c) of this title, or (2) the written request of the State or Indian tribe in any affected State notified under section 10136(a) of this title to the Secretary, whichever,[2] first occurs, the Secretary shall seek to enter into a binding written agreement, and shall begin negotiations, with such State and, where appropriate, to enter into a separate binding agreement with the governing body of any affected Indian tribe, setting forth (but not limited to) the procedures under which the requirements of subsections (a) and (b) of this section, and the provisions of such written agreement, shall be carried out. Any such written agreement shall not affect the authority of the Commission under existing law. Each such written agreement shall, to the maximum extent feasible, be completed not later than 6 months after such notification. If such written agreement is not completed within such period, the Secretary shall report to the Congress in writing within 30 days on the status of negotiations to develop such agreement and the reasons why such agreement has not been completed. Prior to submission of such report to the Congress, the Secretary shall transmit such report to the Governor of such State or the governing body of such affected Indian tribe, as the case may be, for their review and comments. Such comments shall be included in such report prior to submission to the Congress. Such written agreement shall specify procedures—

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[1] So in original. Probably should be "locating".

[2] So in original. The comma probably should not appear.

(1) by which such State or governing body of an affected Indian tribe, as the case may be, may study, determine, comment on, and make recommendations with regard to the possible public health and safety, environmental, social, and economic impacts of any such repository;

(2) by which the Secretary shall consider and respond to comments and recommendations made by such State or governing body of an affected Indian tribe, including the period in which the Secretary shall so respond;

(3) by which the Secretary and such State or governing body of an affected Indian tribe may review or modify the agreement periodically;

(4) by which such State or governing body of an affected Indian tribe is to submit an impact report and request for impact assistance under section 10136(c) of this title or section 10138(b) of this title, as the case may be;

(5) by which the Secretary shall assist such State, and the units of general local government in the vicinity of the repository site, in resolving the offsite concerns of such State and units of general local government, including, but not limited to, questions of State liability arising from accidents, necessary road upgrading and access to the site, ongoing emergency preparedness and emergency response, monitoring of transportation of high-level radioactive waste and spent nuclear fuel through such State, conduct of baseline health studies of inhabitants in neighboring communities near the repository site and reasonable periodic monitoring thereafter, and monitoring of the repository site upon any decommissioning and decontamination;

(6) by which the Secretary shall consult and cooperate with such State on a regular, ongoing basis and provide for an orderly process and timely schedule for State review and evaluation, including identification in the agreement of key events, milestones, and decision points in the activities of the Secretary at the potential repository site;

(7) by which the Secretary shall notify such State prior to the transportation of any high-level radioactive waste and spent nuclear fuel into such State for disposal at the repository site;

(8) by which such State may conduct reasonable independent monitoring and testing of activities on the repository site, except that such monitoring and testing shall not unreasonably interfere with or delay onsite activities;

(9) for sharing, in accordance with applicable law, of all technical and licensing information, the utilization of available expertise, the facilitating of permit procedures, joint project review, and the formulation of joint surveillance and monitoring arrangements to carry out applicable Federal and State laws;

(10) for public notification of the procedures specified under the preceding paragraphs; and

(11) for resolving objections of a State and affected Indian tribes at any stage of the planning, siting, development, construction, operation, or closure of such a facility within such State through negotiation, arbitration, or other appropriate mechanisms.

(Pub. L. 97-425, title I, § 117, Jan. 7, 1983, 96 Stat. 2222.)

### SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10121, 10132, 10136, 10138, 10161 of this title.

## § 10138. Participation of Indian tribes

### (a) Participation of Indian tribes in repository siting decisions

Upon the submission by the President to the Congress of a recommendation of a site for a repository located on the reservation of an affected Indian tribe, the governing body of such Indian tribe may disapprove the site designation and submit to the Congress a notice of disapproval. The governing body of such Indian tribe may submit such a notice of disapproval to the Congress not later than the 60 days after the date that the President recommends such site to the Congress under section 10134 of this title. A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate. Such notice of disapproval shall be accompanied by a statement of reasons explaining why the governing body of such Indian tribe disapproved the recommended repository site involved.

### (b) Financial assistance

(1) The Secretary shall make grants to each affected tribe notified under section 10136(a) of this title for the purpose of participating in activities required by section 10137 of this title or authorized by written agreement entered into pursuant to section 10137(c) of this title. Any

salary or travel expense that would ordinarily be incurred by such tribe, may not be considered eligible for funding under this paragraph.

(2)(A) The Secretary shall make grants to each affected Indian tribe where a candidate site for a repository is approved under section 10132(c) of this title. Such grants may be made to each such Indian tribe only for purposes of enabling such Indian tribe—

(i) to review activities taken under this part with respect to such site for purposes of determining any potential economic, social, public health and safety, and environmental impacts of such repository on the reservation and its residents,

(ii) to develop a request for impact assistance under paragraph (2),

(iii) to engage in any monitoring, testing, or evaluation activities with respect to site characterization programs with regard to such site,

(iv) to provide information to the residents of its reservation regarding any activities of such Indian tribe, the Secretary, or the Commission with respect to such site, and

(v) to request information from, and make comments and recommendations to, the Secretary regarding any activities taken under this part with respect to such site.

(B) The amount of funds provided to any affected Indian tribe under this paragraph in any fiscal year may not exceed 100 percent of the costs incurred by such Indian tribe with respect to the activities described in clauses (i) through (v) of subparagraph (A). Any salary or travel expense that would ordinarily be incurred by such Indian tribe may not be considered eligible for funding under this paragraph.

(3)(A) The Secretary shall provide financial and technical assistance to any affected Indian tribe requesting such assistance and where there is a site with respect to which the Commission has authorized construction of a repository. Such assistance shall be designed to mitigate the impact on such Indian tribe of the development of such repository. Such assistance to such Indian tribe shall commence within 6 months following the granting by the Commission of a construction authorization for such repository and following the initiation of construction activities at such site.

(B) Any affected Indian tribe desiring assistance under this paragraph shall prepare and submit to the Secretary a report on any economic, social, public health and safety, and environmental impacts that are likely as a result of the development of a repository at a site on the reservation of such Indian tribe. Such report shall be submitted to the Secretary following the completion of site characterization activities at such site and before the recommendation of such site to the President by the Secretary for application for a construction authorization for a repository. As soon as practicable following the granting of a construction authorization for such repository, the Secretary shall seek to enter into a binding agreement with the Indian tribe involved setting forth the amount of assistance to be provided to such Indian tribe under this paragraph and the procedures to be followed in providing such assistance.

(4) The Secretary shall grant to each affected Indian tribe where a site for a repository is approved under section 10132(c) of this title an amount each fiscal year equal to the amount such Indian tribe would receive were it authorized to tax site characterization activities at such site, and the development and operation of such repository, as such Indian tribe taxes the other commercial activities occurring on such reservation. Such grants shall continue until such time as all such activities, development, and operation are terminated at such site.

~~(6)[1] An affected Indian tribe may not receive any grant under paragraph (1) after the expiration of the 1-year period following—~~

(i) the date on which the Secretary notifies such Indian tribe of the termination of site characterization activities at the candidate site involved on the reservation of such Indian tribe;

~~(ii) the date on which such site is disapproved under section 10135~~ of this title, or

~~(iii) the date on which the Commission disapproves an application for a construction authorization for a repository at such site;~~

~~whichever occurs first, unless there is another~~ candidate site on the reservation ~~of such~~ Indian tribe that is approved ~~under section 10132(c)~~ of ~~this~~ title and with respect to which the actions described in clauses (i), (ii), and (iii) have not ~~been taken.~~

(B) An affected Indian tribe may not receive any further assistance under paragraph (2) with respect to a site if repository construction activities at such site are terminated by the Secretary or if such activities are permanently enjoined by any court.

(C) At the end of the 2-year period beginning on the effective date of any license to receive and possess for a repository at a site on the reservation of an affected Indian tribe, no Federal funds shall be made available under paragraph (1) or (2) to such Indian tribe, except for—

(i) such funds as may be necessary to support activities of such Indian tribe related to any other repository where a license to receive and possess has not been in effect for more than 1 year, and

(ii) such funds as may be necessary to support activities of such Indian tribe pursuant to agreements or contracts for impact assistance entered into, under paragraph (2), by such Indian tribe with the Secretary during such 2-year period.

(6) Financial assistance authorized in this subsection shall be made out of amounts held in the Nuclear Waste Fund established in section 10222 of this title.

(Pub. L. 97-425, title I, § 118, Jan. 7, 1983, 96 Stat. 2225.)

### SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10121, 10134, 10135, 10137, 10161, 10222 of this title.

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[1] So in original. Probably should be designated "(5)(A)".

### § 10139. Judicial review of agency actions

**(a) Jurisdiction of United States courts of appeals**

(1) Except for review in the Supreme Court of the United States, the United States courts of appeals shall have original and exclusive jurisdiction over any civil action—

(A) for review of any final decision or action of the Secretary, the President, or the Commission under this part;

(B) alleging the failure of the Secretary, the President, or the Commission to make any decision, or take any action, required under this part;

(C) challenging the constitutionality of any decision made, or action taken, under any provision of this part;

(D) for review of any environmental impact statement prepared pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) with respect to any action under this part, or as required under section 10155(c)(1) of this title, or alleging a failure to prepare such statement with respect to any such action;

(E) for review of any environmental assessment prepared under section 10132(b)(1) or 10155(c)(2) of this title; or

(F) for review of any research and development activity under subchapter II of this chapter.

(2) The venue of any proceeding under this section shall be in the judicial circuit in which the petitioner involved resides or has its principal office, or in the United States Court of Appeals for the District of Columbia.

**(c)[10] Deadline for commencing action**

A civil action for judicial review described under subsection (a)(1) of this section may be brought not later than the 180th day after the date of the decision or action or failure to act involved, as the case may be, except that if a party shows that he did not know of the decision or action complained of (or of the failure to act), and that a reasonable person acting under the circumstances would not have known, such party may bring a civil action not later than the 180th day after the date such party acquired actual or constructive knowledge of such decision, action, or failure to act.

(Pub. L. 97-425, title I, § 119, Jan. 7, 1983, 96 Stat. 2227.)

REFERENCES IN TEXT

The National Environmental Policy Act of 1969, referred to in subsec. (a)(1)(D), is Pub. L. 91-190, Jan. 1, 1970, 83 Stat. 852, as amended, which is classified generally to chapter 55 (§ 4321 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 4321 of this title and Tables.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10132, 10145, 10155, 10201 of this title.

### § 10140. Expedited authorizations

**(a) Issuance of authorizations**

(1) To the extent that the taking of any action related to the site characterization of a site or the construction or initial operation of a repository under this part requires a certificate, right-of-way, permit, lease, or other authorization from a Federal agency or officer, such agency or officer shall issue or grant any such authorization at the earliest practicable date, to the extent permitted by the applicable provisions of law administered by such agency or officer. All actions of a Federal agency or officer with respect to consideration of applications or requests for the issuance or grant of any such authorization shall be expedited, and any such application or request shall take precedence over any similar applications or requests not related to such repositories.

(2) The provisions of paragraph (1) shall not apply to any certificate, right-of-way, permit, lease, or other authorization issued or granted by, or requested from, the Commission.

**(b) Terms of authorizations**

Any authorization issued or granted pursuant to subsection (a) of this section shall include such terms and conditions as may be required by ~~law~~, and may include terms and conditions permitted by law.

(Pub. L. 97-425, title I, § 120, Jan. 7, 1983, 96 Stat. 2227.)

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 10145 of this title.

### § 10141. Certain standards and criteria

**(a) Environmental Protection Agency standards**

Not later than 1 year after January 7, 1983, the Administrator, pursuant to authority under other provisions of law, shall, by rule, promulgate generally applicable standards for protection of the general environment from offsite releases from radioactive material in repositories.

**(b) Commission requirements and criteria**

(1)(A) Not later than January 1, 1984, the Commission, pursuant to authority under other provisions of law, shall, by rule, promulgate technical requirements and criteria that it will apply, under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) and the Energy Reorganization Act of 1974 (42 U.S.C. 5801 et seq.), in approving or disapproving—

(i) applications for authorization to construct repositories;

(ii) applications for licenses to receive and possess spent nuclear fuel and high-level radioactive waste in such repositories; and

(iii) applications for authorization for closure and decommissioning of such repositories.

(B) Such criteria shall provide for the use of a system of multiple barriers in the design of the repository and shall include such restrictions on the retrievability of the solidified high-level radioactive waste and spent fuel emplaced months after January 7, 1983. The mission plan shall be used by the Secretary at the end of the first period of 30 calendar days (not including any day on which either House of Congress is not in session because of adjournment of more than 3 calendar days to a day certain) following receipt of the mission plan by the Congress.

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[10] So in original. Section enacted without a subsec. (b).

(Pub. L. 97-425, title III, § 301, Jan. 7, 1983, 96 Stat. 2255.)

### SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10196, 10197 of this title.

### § 10222. Nuclear Waste Fund

**(a) Contracts**

(1) In the performance of his functions under this chapter, the Secretary is authorized to enter into contracts with any person who generates or holds title to high-level radioactive waste, or spent nuclear fuel, of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent fuel. Such contracts shall provide for payment to the Secretary of fees pursuant to paragraphs (2) and (3) sufficient to offset expenditures described in subsection (d) of this section.

(2) For electricity generated by a civilian nuclear power reactor and sold on or after the date 90 days after January 7, 1983, the fee under paragraph (1) shall be equal to 1.0 mil per kilowatt-hour.

(3) For spent nuclear fuel, or solidified high-level radioactive waste derived from spent nuclear fuel, which fuel was used to generate electricity in a civilian nuclear power reactor prior to the application of the fee under paragraph (2) to such reactor, the Secretary shall, not later than 90 days after January 7, 1983, establish a 1 time fee per kilogram of heavy metal in spent nuclear fuel, or in solidified high-level radioactive waste. Such fee shall be in an amount equivalent to an average charge of 1.0 mil per kilowatt-hour for electricity generated by such spent nuclear fuel, or such solidified high-level waste derived therefrom, to be collected from any person delivering such spent nuclear fuel or high-level waste, pursuant to section 10143 of this title, to the Federal Government. Such fee shall be paid to the Treasury of the United States and shall be deposited in the separate fund established by subsection (c) of this section.[1] In paying such a fee, the person delivering spent fuel, or solidified high-level radioactive wastes derived therefrom, to the Federal Government shall have no further financial obligation to the Federal Government for the long-term storage and permanent disposal of such spent fuel, or the solidified high-level radioactive waste derived therefrom.

(4) Not later than 180 days after January 7, 1983, the Secretary shall establish procedures for the collection and payment of the fees established by paragraph (2) and paragraph (3). The Secretary shall annually review the amount of the fees established by paragraphs (2) and (3) above to evaluate whether collection of the fee will provide sufficient revenues to offset the costs as defined in subsection (d) of this section. In the event the Secretary determines that either insufficient or excess revenues are being collected, in order to recover the costs incurred by the Federal Government that are specified in subsection (d) of this section, the Secretary shall propose an adjustment to the fee to insure[2] full cost recovery. The Secretary shall immediately transmit this proposal for such an adjustment to Congress. The adjusted fee proposed by the Secretary shall be effective after a period of 90 days of continuous session have elapsed following the receipt of such transmittal unless during such 90-day period either House of Congress adopts a resolution disapproving the Secretary's proposed adjustment in accordance with the procedures set forth for congressional review of an energy action under section 6421 of this title.

(5) Contracts entered into under this section shall provide that—

(A) following commencement of operation of a repository, the Secretary shall take title to the high-level radioactive waste or spent nuclear fuel involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent fuel; and

(B) in return for the payment of fees established by this section, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent nuclear fuel involved as provided in this subchapter.[1]

(6) The Secretary shall establish in writing criteria setting forth the terms and conditions under which such disposal services shall be made available.

**(b) Advance contracting requirement**

(1)(A) The Commission shall not issue or renew a license to any person to use a utilization or production facility under the authority of section 2133 or 2134 of this title unless—

(i) such person has entered into a contract with the Secretary under this section; or

(ii) the Secretary affirms in writing that such person is actively and in good faith negotiating with the Secretary for a contract under this section.

(B) The Commission, as it deems necessary or appropriate, may require as a precondition to the issuance or renewal of a license under section 2133 or 2134 of this title that the applicant for such license shall have entered into an agreement with the Secretary for the disposal of high-level radioactive waste and spent nuclear fuel that may result from the use of such license.

(2) Except as provided in paragraph (1), no spent nuclear fuel or high-level radioactive waste generated or owned by any person (other than a department of the United States referred to in section 101 or 102 of title 5) may be disposed of by the Secretary in any repository constructed under this chapter unless the generator or owner of such spent fuel or waste has

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[1] See References in Text note below.

[2] So in original. Probably should be "ensure".

entered into a contract with the Secretary under this section by not later than—

(A) June 30, 1983, or

(B) the date on which such generator or owner commences generation of, or takes title to, such spent fuel or waste,

whichever occurs later.

(3) The rights and duties of a party to a contract entered into under this section may be assignable with transfer of title to the spent nuclear fuel or high-level radioactive waste involved.

(4) No high-level radioactive waste or spent nuclear fuel generated or owned by any department of the United States referred to in section 101 or 102 of title 5 may be disposed of by the Secretary in any repository constructed under this chapter unless such department transfers to the Secretary, for deposit in the Nuclear Waste Fund, amounts equivalent to the fees that would be paid to the Secretary under the contracts referred to in this section if such waste or spent fuel were generated by any other person.

**(c) Establishment of Nuclear Waste Fund**

There hereby is established in the Treasury of the United States a separate fund, to be known as the Nuclear Waste Fund. The Waste Fund shall consist of—

(1) all receipts, proceeds, and recoveries realized by the Secretary under subsections (a), (b), and (e) of this section, which shall be deposited in the Waste Fund immediately upon their realization;

(2) any appropriations made by the Congress to the Waste Fund, and

(3) any unexpended balances available on January 7, 1983, for functions or activities necessary or incident to the disposal of civilian high-level radioactive waste or civilian spent nuclear fuel, which shall automatically be transferred to the Waste Fund on such date.

**(d) Use of Waste Fund**

The Secretary may make expenditures from the Waste Fund, subject to subsection (e) of this section, only for purposes of radioactive waste disposal activities under subchapters I and II of this chapter, including—

(1) the identification, development, licensing, construction, operation, decommissioning, and post-decommissioning maintenance and monitoring of any repository, monitored,[3] retrievable storage facility [4] or test and evaluation facility constructed under this chapter;

(2) the conducting of nongeneric research, development, and demonstration activities under this chapter;

(3) the administrative cost of the radioactive waste disposal program;

(4) any costs that may be incurred by the Secretary in connection with the transportation, treating, or packaging of spent nuclear fuel or high-level radioactive waste to be disposed of in a repository, to be stored in a monitored,[3] retrievable storage site [4] or to be used in a test and evaluation facility;

(5) the costs associated with acquisition, design, modification, replacement, operation, and construction of facilities at a repository site, a monitored,[3] retrievable storage site [4] or a test and evaluation facility site and necessary or incident to such repository, monitored,[3] retrievable storage facility [4] or test and evaluation facility; and

(6) the provision of assistance to States, units of general local government, and Indian tribes under sections 10136, 10138, and 10199 of this title.

No amount may be expended by the Secretary under this subchapter [5] for the construction or expansion of any facility unless such construction or expansion is expressly authorized by this or subsequent legislation. The Secretary hereby is authorized to construct one repository and one test and evaluation facility.

**(e) Administration of Waste Fund**

(1) The Secretary of the Treasury shall hold the Waste Fund and, after consultation with the Secretary, annually report to the Congress on the financial condition and operations of the Waste Fund during the preceding fiscal year.

(2) The Secretary shall submit the budget of the Waste Fund to the Office of Management and Budget triennially along with the budget of the Department of Energy submitted at such time in accordance with chapter 11 of title 31. The budget of the Waste Fund shall consist of the estimates made by the Secretary of expenditures from the Waste Fund and other relevant financial matters for the succeeding 3 fiscal years, and shall be included in the Budget of the United States Government. The Secretary may make expenditures from the Waste Fund, subject to appropriations which shall remain available until expended. Appropriations shall be subject to triennial authorization.

(3) If the Secretary determines that the Waste Fund contains at any time amounts in excess of current needs, the Secretary may request the Secretary of the Treasury to invest such amounts, or any portion of such amounts as the Secretary determines to be appropriate, in obligations of the United States—

(A) having maturities determined by the Secretary of the Treasury to be appropriate to the needs of the Waste Fund; and

(B) bearing interest at rates determined to be appropriate by the Secretary of the Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States with remaining periods to maturity comparable to the maturities of such investments, except that the interest rate on such investments shall not exceed the average interest rate applicable to existing borrowings.

(4) Receipts, proceeds, and recoveries realized by the Secretary under this section, and expenditures of amounts from the Waste Fund, shall be exempt from annual apportionment under the provisions of subchapter II of chapter 15 of title 31.

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[3] So in original. The comma probably should not appear.

[4] So in original. Probably should be followed by a comma.

[5] See References in Text note below.

(5) If at any time the moneys available in the Waste Fund are insufficient to enable the Secretary to discharge his responsibilities under this subchapter,[*] the Secretary shall issue to the Secretary of the Treasury obligations in such forms and denominations, bearing such maturities, and subject to such terms and conditions as may be agreed to by the Secretary and the Secretary of the Treasury. The total of such obligations shall not exceed amounts provided in appropriation Acts. Redemption of such obligations shall be made by the Secretary from moneys available in the Waste Fund. Such obligations shall bear interest at a rate determined by the Secretary of the Treasury, which shall be not less than a rate determined by taking into consideration the average market yield on outstanding marketable obligations of the United States of comparable maturities during the month preceding the issuance of the obligations under this paragraph. The Secretary of the Treasury shall purchase any issued obligations, and for such purpose the Secretary of the Treasury is authorized to use as a public debt transaction the proceeds from the sale of any securities issued under chapter 31 of title 31, and the purposes for which securities may be issued under such Act[*] are extended to include any purchase of such obligations. The Secretary of the Treasury may at any time sell any of the obligations acquired by him under this paragraph. All redemptions, purchases, and sales by the Secretary of the Treasury of obligations under this paragraph shall be treated as public debt transactions of the United States.

(6) Any appropriations made available to the Waste Fund for any purpose described in subsection (d) of this section shall be repaid into the general fund of the Treasury, together with interest from the date of availability of the appropriations until the date of repayment. Such interest shall be paid on the cumulative amount of appropriations available to the Waste Fund, less the average undisbursed cash balance in the Waste Fund account during the fiscal year involved. The rate of such interest shall be determined by the Secretary of the Treasury taking into consideration the average market yield during the month preceding each fiscal year on outstanding marketable obligations of the United States of comparable maturity. Interest payments may be deferred with the approval of the Secretary of the Treasury, but any interest payments so deferred shall themselves bear interest.

(Pub. L. 97-425, title III, § 302, Jan. 7, 1983, 96 Stat. 2257.)

REFERENCES IN TEXT

Subsection (c) of this section, referred to in subsec. (a)(3), was in the original "subsection (c) 126(b)" and was translated as subsection (c) of this section as the probable intent of Congress in view of the establishment of the Nuclear Waste Fund by subsec. (c) of this section and the absence of a section 126 in Pub. L. 97-425.

This subchapter, referred to in subsecs. (a)(5)(B), (d), and (e)(5), was in the original "this subtitle", and was translated as this subchapter to reflect the probable intent of Congress because title III of Pub. L. 97-425, which enacted this subchapter, does not contain subtitles.

Such Act, referred to in subsec. (e)(5), probably means chapter 31 of Title 31, Money and Finance.

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 10101, 10107, 10136, 10138, 10161, 10193, 10194 of this title.

### § 10223. Alternative means of financing

The Secretary shall undertake a study with respect to alternative approaches to managing the construction and operation of all civilian radioactive waste management facilities, including the feasibility of establishing a private corporation for such purposes. In conducting such study, the Secretary shall consult with the Director of the Office of Management and Budget, the Chairman of the Commission, and such other Federal agency representatives as may be appropriate. Such study shall be completed, and a report containing the results of such study shall be submitted to the Congress, within 1 year after January 7, 1983.

(Pub. L. 97-425, title III, § 303, Jan. 7, 1983, 96 Stat. 2261.)

### § 10224. Office of Civilian Radioactive Waste Management

**(a) Establishment**

There hereby is established within the Department of Energy an Office of Civilian Radioactive Waste Management. The Office shall be headed by a Director, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate payable for level IV of the Executive Schedule under section 5315 of title 5.

**(b) Functions of Director**

The Director of the Office shall be responsible for carrying out the functions of the Secretary under this chapter, subject to the general supervision of the Secretary. The Director of the Office shall be directly responsible to the Secretary.

**(c) Annual report to Congress**

The Director of the Office shall annually prepare and submit to the Congress a comprehensive report on the activities and expenditures of the Office.

**(d) Annual audit by Comptroller General**

The Comptroller General of the United States shall annually make an audit of the Office, in accordance with such regulations as the Comptroller General may prescribe. The Comptroller General shall have access to such books, records, accounts, and other materials of the Office as the Comptroller General determines to be necessary for the preparation of such audit. The Comptroller General shall submit to the Congress a report on the results of each audit conducted under this section.

(Pub. L. 97-425, title III, § 304, Jan. 7, 1983, 96 Stat. 2[illegible].)

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 10101 of this title.

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[*] See References in Text note below.

American Arbitration Association. The two arbitrators thus selected shall name a third arbitrator within thirty (30) days of their first meeting. In the event of their failure to so name such third arbitrator, that arbitrator shall be named as provided in the Commercial Arbitration Rules of the American Arbitration Association. The third arbitrator shall act as chairperson of the panel. The arbitration shall be governed by the Commercial Arbitration Rules of the American Arbitration Association. The arbitration shall be limited to the issue submitted. The panel of arbitrators shall not rewrite, change, or amend these General Regulations or the Contracts of any of the parties to the dispute. The panel of arbitrators shall render a final decision in this dispute within sixty (60) days after the date of the naming of the third arbitrator. A decision of any two of the three arbitrators named to the panel shall be final and binding on all parties involved in the dispute.

**§ 904.14 Future regulations.**

(a) Western may from time to time promulgate such additional or amendatory regulations as deemed necessary for the administration of the Project in accordance with applicable law: *Provided*, That no right under any Contract shall be impaired or obligation thereunder be extended thereby.

(b) Any modification, extension, or waiver of any provision of these General Regulations granted for the benefit of any one or more Contractors shall not be denied to any other Contractor.

(c) Western reserves the right to terminate, modify, or extend these regulations, either partially or in their entirety, to the extent permitted by law or existing contract.

## PART 960—GENERAL GUIDELINES FOR THE RECOMMENDATION OF SITES FOR NUCLEAR WASTE REPOSITORIES

### Subpart A—General Provisions

Sec.

960.1 Applicability.
960.2 Definitions.

Sec.

### Subpart B—Implementation Guidelines

960.3 Implementation guidelines.
960.3-1 Siting provisions.
960.3-1-1 Diversity of geohydrologic settings.
960.3-1-2 Diversity of rock types.
960.3-1-3 Regionality.
960.3-1-4 Evidence of siting decisions.
960.3-1-4-1 Site identification as potentially acceptable.
960.3-1-4-2 Site nomination for characterization.
960.3-1-4-3 Site recommendation for characterization.
960.3-1-4-4 Site recommendation for repository development.
960.3-1-5 Basis for site evaluations.
960.3-2 Siting process.
960.3-2-1 Site screening for potentially acceptable sites.
960.3-2-2 Nomination of sites as suitable for characterization.
960.3-2-2-1 Evaluation of all potentially acceptable sites.
960.3-2-2-2 Selection of sites within geohydrologic settings.
960.3-2-2-3 Comparative evaluation of all sites proposed for nomination.
960.3-2-2-4 The environmental assessment.
960.3-2-2-5 Formal site nomination.
960.3-2-3 Recommendation of sites for characterization.
960.3-2-4 Recommendation of sites for the development of repositories.
960.3-3 Consultation.
960.3-4 Environmental impacts.

### Subpart C—Postclosure guidelines

960.4 Postclosure guidelines.
960.4-1 System guideline.
960.4-2 Technical guidelines.
960.4-2-1 Geohydrology.
960.4-2-2 Geochemistry.
960.4-2-3 Rock characteristics.
960.4-2-4 Climatic changes.
960.4-2-5 Erosion.
960.4-2-6 Dissolution.
960.4-2-7 Tectonics.
960.4-2-8 Human interference.
960.4-2-8-1 Natural resources.
960.4-2-8-2 Site ownership and control.

### Subpart D—Preclosure Guidelines

960.5 Preclosure guidelines.
960.5-1 System guidelines.
960.5-2 Technical guidelines.

### PRECLOSURE RADIOLOGICAL SAFETY

960.5-2-1 Population density and distribution.
960.5-2-2 Site ownership and control.
960.5-2-3 Meteorology.

960.5-2-4 Offsite installations and operations.

ENVIRONMENT, SOCIOECONOMICS, AND TRANSPORTATION

960.5-2-5 Environmental quality
960.5-2-6 Socioeconomic impacts
960.5-2-7 Transportation

EASE AND COST OF SITING, CONSTRUCTION, OPERATION AND CLOSURE

960.5-2-8 Surface characteristics
960.5-2-9 Rock characteristics
960.5-2-10 Hydrology
960.5-2-11 Tectonics

APPENDIX I—NRC AND EPA REQUIREMENTS FOR POSTCLOSURE REPOSITORY PERFORMANCE
APPENDIX II—NRC AND EPA REQUIREMENTS FOR PRECLOSURE REPOSITORY PERFORMANCE
APPENDIX III—APPLICATION OF THE SYSTEM AND TECHNICAL GUIDELINES DURING THE SITING PROCESS
APPENDIX IV—TYPES OF INFORMATION FOR THE NOMINATION OF SITES AS SUITABLE FOR CHARACTERIZATION

AUTHORITY: The Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.); Energy Reorganization Act of 1974 (42 U.S.C. 5801 et seq.); Department of Energy Organization Act of 1977 (42 U.S.C. 7101 et seq.); Nuclear Waste Policy Act of 1982 (Pub. L. 97-425, 96 Stat. 2201).

SOURCE: 49 FR 47752, Dec. 6, 1984, unless otherwise noted.

## Subpart A—General Provisions

### § 960.1 Applicability.

These guidelines were developed in accordance with the requirements of Section 112(a) of the Nuclear Waste Policy Act of 1982 for use by the Secretary of Energy in evaluating the suitability of sites for the development of repositories. The guidelines will be used for suitability evaluations and determinations made pursuant to Section 112(b) and any preliminary suitability determinations required by Section 114(f). The guidelines set forth in this Part are intended to complement the requirements set forth in the Act, 10 CFR Part 60, and 40 CFR Part 191. The DOE recognizes NRC jurisdiction for the resolution of differences between the guidelines and 10 CFR Part 60. The guidelines have received the concurrence of the NRC. The DOE contemplates revising the guidelines from time to time, as permitted by the Act, to take into account revisions made to the above regulations and to otherwise update the guidelines as necessary. The DOE will submit the revisions to the NRC and obtain its concurrence before issuance.

### § 960.2 Definitions.

As used in this part:

"Accessible environment" means the atmosphere, the land surface, surface water, oceans, and the portion of the lithosphere that is outside the controlled area.

"Act" means the Nuclear Waste Policy Act of 1982.

"Active fault" means a fault along which there is recurrent movement, which is usually indicated by small, periodic displacements or seismic activity.

"Affected area" means either the area of socioeconomic impact or the area of environmental impact, each of which will vary in size among potential repository sites.

"Affected Indian tribe" means any Indian tribe (1) within whose reservation boundaries a repository for radioactive waste is proposed to be located or (2) whose federally defined possessory or usage rights to other lands outside the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility: *Provided*, That the Secretary of the Interior finds, upon the petition of the appropriate governmental officials of the tribe, that such effects are both substantial and adverse to the tribe.

"Affected State" means any State that (1) has been notified by the DOE in accordance with Section 116(a) of the Act as containing a potentially acceptable site; (2) contains a candidate site for site characterization or repository development; or (3) contains a site selected for repository development.

"Application" means the act of making a finding of compliance or noncompliance with the qualifying or disqualifying conditions specified in the guidelines of Subparts C and D, in accordance with the types of findings specified in Appendix III.

"Aquifer" means a formation, a group of formations, or a part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

"Barrier" means any material or structure that prevents or substantially delays the movement of water or radionuclides.

"Candidate site" means an area, within a geohydrologic setting, that is recommended by the Secretary of Energy under Section 112 of the Act for site characterization, approved by the President under Section 112 of the Act for characterization, or undergoing site characterization under Section 113 of the Act.

"Closure" means final backfilling of the remaining open operational areas of the underground facility and boreholes after the termination of waste emplacement, culminating in the sealing of shafts.

"Confining unit" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

"Containment" means the confinement of radioactive waste within a designated boundary.

"Controlled area" means a surface location, to be marked by suitable monuments, extending horizontally no more than 10 kilometers in any direction from the outer boundary of the underground facility, and the underlying subsurface, which area has been committed to use as a geologic repository and from which incompatible activities would be prohibited before and after permanent closure.

"Cumulative releases of radionuclides" means the total number of curies of radionuclides entering the accessible environment in any 10,000-year period, normalized on the basis of radiotoxicity in accordance with 40 CFR Part 191. The peak cumulative release of radionuclides refers to the 10,000-year period during which any such release attains its maximum predicted value.

"Decommissioning" means the permanent removal from service of surface facilities and components neceessary for preclosure operations only, after repository closure, in accordance with regulatory requirements and environmental policies.

"Determination" means a decision by the Secretary that a site is suitable for site characterization for the selection of a repository site or that a site is suitable for the development of a repository, consistent with applications of the guidelines of Subparts C and D in accordance with the provisions set forth in Subpart B.

"Disposal" means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste, and the isolation of such waste from the accessible environment.

"Disqualifying condition" means a condition that, if present at a site, would eliminate that site from further consideration.

"Disturbed zone" means that portion of the controlled area, excluding shafts, whose physical or chemical properties are predicted to change as a result of underground facility construction or heat generated by the emplaced radioactive waste such that the resultant change of properties could have a significant effect on the preformance of the geologic repository.

"DOE" means the U.S. Department of Energy or its duly authorized representatives.

"Effective porosity" means the amount of interconnected pore space and fracture openings available for the transmission of fluids, expressed as the ratio of the volume of interconnected pores and openings to the volume of rock.

"Engineered-barrier system" means the manmade components of a disposal system designed to prevent the release of radionuclides from the underground facility or into the geohydrologic setting. Such term includes the radioactive-waste form, radioactive-waste canisters, materials placed over and around such canisters, any other components of the waste package, and barriers used to seal penetrations in and into the underground facility.

"Environmental assessment" means the document required by Section 112(b)(1)(E) of the Nuclear Waste Policy Act of 1982.

"Environmental impact statement" means the document required by Section 102(2)(C) of the National Environmental Policy Act of 1969. Sections 114(a) and 114(f) of the Nuclear Waste Policy Act of 1982 include certain limitations on the National Environmental Policy Act requirements as they apply to the preparation of an environmental impact statement for the development of a repository at a characterized site.

"EPA" means the U.S. Environmental Protection Agency or its duly authorized representatives.

"Evaluation" means the act of carefully examining the characteristics of a site in relation to the requirements of the qualifying or disqualifying conditions specified in the guidelines of Subparts C and D. Evaluation includes the consideration of favorable and potentially adverse conditions.

"Excepted" means assumed to be probable or certain on the basis of existing evidence and in the absence of significant evidence to the contrary.

"Expected repository performance" means the manner in which the repository is predicted to function, consideration those conditions, processes, and events that are likely to prevail or may occur during the time period of interest.

"Facility" means any structure, system, or system component, including engineered barriers, created by the DOE to meet repository-performance or functional objectives.

"Fault" means a fracture or a zone of fractures along which there has been displacement of the side relative to one another parallel to the fracture or zone of fractures.

"Faulting" means the process of fracturing and displacement that produces a fault.

"Favorable condition" means a condition that, though not necessary to qualify a site, is presumed, if present, to enhance confidence that the qualifying condition of a particular guideline can be met.

"Finding" means a conclusion that is reached after evaluation.

"Geohydrologic setting" means the system of geohydrologic units that is located within a given geologic setting.

"Geohydrologic system" means the geohydrologic units within a geologic setting, including any recharge, discharge, interconnections between units, and any natural or man-induced processes or events that could affect ground-water flow within or among those units.

"Geohydrologic unit" means an aquifer, a confining unit, or a combination of aquifers and confining units comprising a framework for a reasonably distinct geohydrologic system.

"Geologic repository" means a system, requiring licensing by the NRC, that is intended to be used, or may be used, for the disposal of radioactive waste in excavated geologic media. A geologic repository includes (1) the geologic-repository operations area and (2) the portion of the geologic setting that provides isolation of the radioactive waste and is located within the controlled area.

"Geologic-repository operations area" means a radioactive-waste facility that is part of the geologic repository, including both surface and subsurface areas and facilities where waste-handling activities are conducted.

"Geologic setting" means the geologic, hydrologic, and geochemical systems of the region in which a geologic-repository operations area is or may be located.

"Geomorphic processes" means geologic processes that are responsible for the general configuration of the Earth's surface, including the development of present landforms and their relationships to underlying structures, and are responsible for the geologic changes recorded by these surface features.

"Ground water" means all subsurface water as distinct from surface water.

"Ground-water flux" means the rate of ground-water flow per unit area of porous or fractured media measured perpendicular to the direction of flow.

"Ground-water sources" means aquifers that have been or could be economically and technologically developed as sources of water in the foreseeable future.

"Ground-water travel time" means the time required for a unit volume of ground water to travel between two locations. The travel time is the length of the flow path divided by the velocity, where velocity is the average ground-water flux passing through the cross-sectional area of the geologic medium through which flow occurs, perpendicular to the flow direction, divided by the effective porosity along the flow path. If discrete segments of the flow path have different hydrologic properties, the total travel time will be the sum of the travel times for each discrete segment.

"Guideline" means a statement of policy or procedure that may include, when appropriate, qualifying, disqualifying, favorable, or potentially adverse conditions as specified in the "guidelines."

"Guidelines" means Part 960 of Title 10 of the Code of Federal Regulations—General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories.

"High-level radioactive waste" means (1) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations and (2) other highly radioactive material that the NRC, consistent with existing law, determines by rule requires permanent isolation.

"Highly populated area" means any incoporated place (recognized by the decennial reports of the U.S. Bureau of the Census) of 2,500 or more persons, or any census designated place (as defined and delineated by the Bureau) of 2,500 or more persons, unless it can be demonstrated that any such place has a lower population density than the mean value for the continental United States. Counties or county equivalents, whether incorporated or not, are specifically excluded form the definition of "place" as used herein.

"Host rock" means the geologic medium in which the waste is emplaced, specifically the geologic materials that directly encompass and are in close proximity to the underground facility.

"Hydraulic conductivity" means the volume of water that will move through a medium in a unit of time under a unit hydraulic gradient through a unit area measured perpendicular to the direction of flow.

"Hydraulic gradient" means a change in the static pressure of ground water, expressed in terms of the height of water above a datum, per unit of distance in a given direction.

"Hydrologic process" means any hydrologic phenomenon that exhibits a continuous change in time, whether slow or rapid.

"Hydrologic properties" means those properties of a rock that govern the entrance of water and the capacity to hold, transmit, and deliver water, such as porosity, effective porosity, specific retention, permeability, and the directions of maximum and minimum permeabilities.

"Igneous activity" means the emplacement (intrusion) of molten rock material (magma) into material in the Earth's crust or the expulsion (extrusion) of such material onto the Earth's surface or into its atmosphere or surface water.

"Isolation" means inhibiting the transport of radioactive material so that the amounts and concentrations of this material entering the accessible environment will be kept within prescribed limits.

"Likely" means processing or displaying the qualities, characteristics, or attributes that provide a reasonable basis for confidence that what is expected indeed exists or will occur.

"Lithosphere" means the solid part of the Earth, including any ground water contained within it.

"Member of the public" means any individual who is not engaged in operations involving the management, storage, and disposal of radioactive waste. A worker so engaged is a member of the public except when on duty at the geologic-repository operations area.

"Mitigation" means: (1) Avoiding the impact altogether by not taking a certain action or parts of an action; (2)

minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or (5) compensating for the impact by replacing or providing substitute resources or environments.

"Model" means a conceptual description and the associated mathematical representation of a system, subsystem, component, or condition that is used to predict changes from a baseline state as a function of internal and/or external stimuli and as a function of time and space.

"NRC" means the U.S. Nuclear Regulatory Commission or its duly authorized representatives.

"Perched ground water" means unconfined ground water separated from an underlying body of ground water by an unsaturated zone. Its water table is a perched water table. Perched ground water is held up by a perching bed whose permeability is so low that water percolating downward through it is not able to bring water in the underlying unsaturated zone above atmospheric pressure.

"Performance assessment" means any analysis that predicts the behavior of a system or system component under a given set of constant and/or transient conditions. Performance assessments will include estimates of the effects of uncertainties in data and modeling.

"Permanent closure" is synonymous with "closure."

"Postclosure" means the period of time after the closure of the geologic repository.

"Potentially acceptable site" means any site at which, after geologic studies and field mapping but before detailed geologic data gathering, the DOE undertakes preliminary drilling and geophysical testing for the definition of site location.

"Potentially adverse condition" means a condition that is presumed to detract from expected system performance, but further evaluation, additional data, or the identification of compensating or mitigating factors may indicate that its effect on the expected system performance is acceptable.

"Preclosure" means the period of time before and during the closure of the geologic repository.

"Pre-waste-emplacement" means before the authorization of repository construction by the NRC.

"Qualifying condition" means a condition that must be satisfied for a site to be considered acceptable with respect to a specific guideline.

"Quaternary Period" means the second period of the Cenozoic Era, following the Tertiary, beginning 2 to 3 million years ago and extending to the present.

"Radioactive waste" or "waste" means high-level radioactive waste and other radioactive materials, including spent nuclear fuel, that are received for emplacement in a geologic repository.

"Radioactive-waste facility" means a facility subject to the licensing and related regulatory authority of the NRC pursuant to Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974 (88 Stat. 1244).

"Radionuclide retardation" means the process or processes that cause the time required for a given radionuclide to move between two locations to be greater than the ground-water travel time, because of physical and chemical interactions between the radionuclide and the geohydrologic unit through which the radionuclide travels.

"Reasonably available technology" means technology which exists and has been demonstrated or for which the results of any requisite development, demonstration, or confirmatory testing efforts before application will be available within the required time period.

"Repository" is synonymous with "geologic repository."

"Repository closure" is synonymous with "closure."

"Repository construction" means all excavation and mining activities associated with the construction of shafts, shaft stations, rooms, and necessary openings in the underground facility, preparatory to radioactive-waste emplacement, as well as the construction of necessary surface facilities, but excluding site-characterization activities.

"Repository operation" means all of the functions at the site leading to and involving radioactive-waste emplacement in the underground facility, including receiving, transportation, handling, emplacement, and, if necessary, retrieval.

"Repository support facilities" means all permanent facilities constructed in support of site-characterization activities and repository construction, operation, and closure activities, including surface structures, utility lines, roads, railroads, and similar facilities, but excluding the underground facility.

"Restricted area" means any area access to which is controlled by the DOE for purposes of protecting individuals from exposure to radiation and radioactive materials before repository closure, but not including any areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area.

"Retrieval" means the act of intentionally removing radioactive waste before repository closure from the underground location at which the waste had been previously emplaced for disposal.

"Saturated zone" means that part of the Earth's crust beneath the water table in which all voids, large and small, are ideally filled with water under pressure greater than atmospheric.

"Secretary" means the Secretary of Energy.

"Site" means a potentially acceptable site or a candidate site, as appropriate, until such time as the controlled area has been established, at which time the site and the controlled area are the same.

"Site characterization" means activities, whether in the laboratory or in the field, undertaken to establish the geologic conditions and the ranges of the parameters of a candidate site relevant to the location of a repository, including borings, surface excavations, excavations of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing needed to evaluate the suitability of a candidate site for the location of a repository, but not including preliminary borings and geophysical testing needed to assess whether site characterization should be undertaken.

"Siting" means the collection of exploration, testing, evaluation, and decision-making activities associated with the process of site screening, site nomination, site recommendation, and site approval for characterization or repository development.

"Source term" means the kinds and amounts of radionuclides that make up the source of a potential release of radioactivity.

"Spent nuclear fuel" means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

"Surface facilities" means repository support facilities within the restricted area.

"Surface water" means any waters on the surface of the Earth, including fresh and salt water, ice, and snow.

"System" means the geologic setting at the site, the waste package, and the repository, all acting together to contain and isolate the waste.

"System performance" means the complete behavior of a repository system in response to the conditions, processes, and events that may affect it.

"Tectonic" means of, or pertaining to, the forces involved in, or the resulting structures or features of, "tectonics."

"Tectonics" means the branch of geology dealing with the broad architecture of the outer part of the Earth, that is, the regional assembling of structural or deformational features and the study of their mutual relations, origin, and historical evolution.

"To the extent practicable" means the degree to which an intended course of action is capable of being effected in a manner that is reasonable and feasible within a framework of constraints.

"Underground facility" means the underground structure and the rock required for support, including mined openings and backfill materials, but excluding shafts, boreholes, and their seals.

"Unsaturated zone" means the zone between the land surface and the water table. Generally, water in this zone is under less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure. Beneath flooded areas or in perched water bodies, the water pressure locally may be greater than atmospheric.

"Waste form" means the radioactive waste materials and any encapsulating or stabilizing matrix.

"Waste package" means the waste form and any containers, shielding, packing, and other sorbent materials immediately surrounding an individual waste container.

"Water table" means that surface in a body of ground water at which the water pressure is atmospheric.

## Subpart B—Implementation Guidelines

### § 960.3 Implementation guidelines.

The guidelines of this subpart establish the procedure and basis for applying the postclosure and the preclosure guidelines of Subparts C and D, respectively, to evaluations of the suitability of sites for the development of repositories. As may be appropriate during the siting process, this procedure requires consideration of a variety of geohydrologic settings and rock types, regionality, and environmental impacts and consultation with affected States, affected Indian tribes, and Federal agencies.

### § 960.3-1 Siting provisions.

The siting provisions establish the framework for the implementation of the siting process specified in § 960.3-2. Sections 960.3-1-1 and 960.3-1-2 require that consideration be given to sites situated in different geohydrologic settings and different types of host rock, respectively. These diversity guidelines are intended to balance the process of site selection by requiring consideration of a variety of geologic conditions and media, and thereby enhance confidence in the technical suitability of sites selected for the development of repositories. As required by the Act, § 960.3-1-3 specifies consideration of a regional distribution of repositories after recommendation of a site for development of the first repository. Section 960.3-1-4 describes the evidence that is required to support siting decisions. Section 960.3-1-5 establishes the basis for site evaluations against the postclosure and the preclosure guidelines of Subparts C and D during the various phases of the siting process.

### § 960.3-1-1 Diversity of geohydrologic settings.

Consideration shall be given to a variety of geohydrologic settings in which sites for the development of repositories may be located. To the extent practicable, sites recommended as candidate sites for characterization shall be located in different geohydrologic settings.

### § 960.3-1-2 Diversity of rock types.

Consideration shall be given to a variety of geologic media in which sites for the development of repositories may be located. To the extent practicable, and with due consideration of candidate sites characterized previously or approved for such characterization if the circumstances apply, sites recommended as candidate sites for characterization shall have different types of host rock.

### § 960.3-1-3 Regionality.

In making site recommendations for repository development after the site for the first repository has been recommended, the Secretary shall give due consideration to the need for, and the advantages of, a regional distribution in the siting of subsequent repositories. Such consideration shall take into account the proximity of sites to locations at which waste is generated or temporarily stored and at which other repositories have been or are being developed.

### § 960.3-1-4 Evidence for siting decisions.

The siting process involves a sequence of four decisions: The identification of potentially acceptable sites; the nomination of sites as suitable for characterization; the recommendation of sites as candidate sites for site characterization; and after the completion of site characterization and nongeologic data gathering, the recommendation of a candidate site for the development of a repository. Each of these decisions will be supported by the evidence specified below.

### § 960.3-1-4-1 Site identification as potentially acceptable.

The evidence for the identification of a potentially acceptable site shall be the types of information specified in Appendix IV of this part. Such evidence will be relatively general and less detailed than that required for the nomination of a site as suitable for characterization. Because the gathering of detailed geologic data will not take place until after the recommendation of a site for characterization, the levels of information may be relatively greater for the evaluation of those guidelines in Subparts C and D that pertain to surface-identifiable factors for such site. The sources of information shall include the literature in the public domain and the private sector, when available, and will be supplemented in some instances by surface investigations and conceptual engineering design studies conducted by the DOE. Geologic surface investigations may include the mapping of identifiable rock masses, fracture and joint characteristics, and fault zones. Other surface investigations will consider the aquatic and terrestrial ecology; water rights and uses; topography; potential offsite hazards; natural resource concentrations; national or State protected resources; existing transportation systems; meteorology and climatology; population densities, centers, and distributions; and general socioeconomic characteristics.

### § 960.3-1-4-2 Site nomination for characterization.

The evidence required to support the nomination of a site as suitable for characterization shall include the types of information specified in Appendix IV of this part and shall be contained or referenced in the environmental assessments to be prepared in accordance with the requirements of the Act. The source of this information shall include the literature and related studies in the public domain and the private sector, when available, and various meteorological, environmental, socioeconomic, and transportation studies conducted by the DOE in the affected area; exploratory boreholes in the region of such site, including lithologic logging and hydrologic and geophysical testing of such boreholes, laboratory testing of core samples for the evaluation of geochemical and engineering rock properties, and chemical analyses of water samples from such boreholes; surface investigations, including geologic mapping and geophysical surveys, and compilations of satellite imagery data; in situ or laboratory testing of similar rock types under expected repository conditions; evaluations of natural and man-made analogs of the repository and its subsystems, such as geothermally active areas, underground excavations, and case histories of socioeconomic cycles in areas that have experienced intermittent large-scale construction and industrial activities; and extrapolations of regional data to estimate site-specific characteristics and conditions. The exact types and amounts of information to be collected within the above categories, including such details as the specific types of hydrologic tests, combinations of geophysical tests, or number of exploratory boreholes, are dependent on the site-specific needs for the application of the guidelines of Subparts C and D, in accordance with the provisions of this Subpart and the application requirements set forth in Appendix III of this part. The evidence shall also include those technical evaluations that use the information specified above and that provide additional bases for evaluating the ability of a site to meet the qualifying conditions of the guidelines of Subparts C and D. In developing the above-mentioned bases for evaluation, as may be necessary, assumptions that approximate the characteristics or conditions considered to exist at a site, or expected to exist or occur in the future, may be used. These assumptions will be realistic but conservative enough to underestimate the potential for a site to meet the qualifying condition of a guideline; that is, the use of such assumptions should not lead to an exaggeration of the ability of a site to meet the qualifying condition.

### § 960.3-1-4-3 Site recommendation for characterization.

The evidence required to support the recommendation of a site as a candidate site for characterization shall consist of the evaluations and data contained or referenced in the environmental assessment for such site, unless the Secretary certifies that such information, in the absence of additional preliminary borings or excavations, will not be adequate to satisfy applicable requirements of the Act.

### § 960.3-1-4-4 Site recommendation for repository development.

The evidence required to support the recommendation of a candidate site for the development of a repository, after the completion of characterization activities at such site, shall consist of the information specified in Section 114(a) of the Act for the comprehensive statement of the basis for such recommendation and Section 114(f) of the Act for the environmental impact statement. This evidence shall be obtained by the characterization of such site, according to the requirements specified in Section 113(b) of the Act and in 10 CFR 60.11, and by nongeologic data gathering.

### § 960.3-1-5 Basis for site evaluations.

Evaluations of individual sites and comparisons between and among sites shall be based on the postclosure and preclosure guidelines specified in Subparts C and D, respectively. Except for screening for potentially acceptable sites as specified in § 960.3-2-1, such evaluations shall place *primary significance* on the postclosure guidelines and *secondary significance* on the preclosure guidelines, with each set of guidelines considered collectively for such purposes. Both the postclosure and the preclosure guidelines consist of a system guideline or guidelines and corresponding groups of technical guidelines. The postclosure guidelines of Subpart C contain eight technical guidelines in one group. The preclosure guidelines of Subpart D contain eleven technical guidelines separated into three groups that represent, in *decreasing order of importance*, preclosure radiological safety; environment, socioeconomics, and transportation; and ease and cost of siting, construction, operation, and closure. The relative significance of any technical guideline to its corresponding system guideline is site specific. Therefore, for each technical guideline, an evaluation of compliance with the qualifying condition shall be made in the context of the collection of system elements and the evidence related to that guideline, considering on balance the favorable conditions and the potentially adverse conditions identified at a site. Similarly, for each system guideline, such evaluation shall be made in the context of the group of technical guidelines and the evidence related to that system guideline. For purposes of recommending sites for development as respositories, such evidence shall include analyses of expected respository performance to assess the likelihood of demonstrating compliance with 40 CFR Part 191 and 10 CFR Part 60, in accordance with § 960.4-1. A site shall be disqualified at any time during the siting process if the evidence supports a finding by the DOE that a disqualifying condition exists or the qualifying condition of any system or technical guideline cannot be met. Comparisons between and among sites shall be based on the system guidelines, to the extent practicable and in accordance with the levels of relative significance specified above for the postclosure and the preclosure guidelines. Such comparisons are intended to allow comparative evaluations of sites in terms of the capabilities of the natural barriers for waste isolation and to identify innate deficiencies that could jeopardize compliance with such requirements. If the evidence for the sites is not adequate to substantiate such comparisons, then the comparisons shall be based on the groups of technical guidelines under the postclosure and the preclosure guidelines, considering the levels of relative significance appropriate to the postclosure and the preclosure guidelines and the order of importance appropriate to the subordinate groups within the preclosure guidelines. Comparative site evaluations shall place primary importance on the natural barriers of the site. In such evaluations for the postclosure guidelines of Subpart C, engineered barriers shall be considered only to the extent necessary to obtain realistic source terms for comparative site evaluations based on the sensitivity of the natural barriers to such realistic engineered barriers. For a better understanding of the potential effects of engineered barriers on the overall performance of the repository system, these comparative evaluations shall consider a range of levels in the performance of the engineered barriers. That range of performance levels shall vary by at least a factor of 10 above and below the engineered-barrier performance requirements set forth in 10 CFR 60.113, and the range considered shall be identical for all sites compared. The comparisons shall assume equivalent engineered-barrier performance for all sites compared and shall be structured so that engineered barriers are not relied upon to compensate for deficiencies in the geologic media. Furthermore, engineered barriers shall not be used to compensate for an inadequate site; mask the innate deficiencies of a site; disguise the strengths and weaknesses of a site and the overall system; and mask differences between sites when they are compared. Site comparisons performed to support the recommendation of sites for the development of repositories in § 960.3-2-4 shall evaluate predicted releases of radionuclides to the accessible environment. For the purposes of such comparison, the accessible environment shall consist of the atmosphere, the land surface, any nearby surface water, and those portions of the lithosphere that are situated more than 10 kilometers in a horizontal direction from the outer boundary of the original location of the waste emplacement in the geologic repository. Releases of different radionuclides shall be combined by the methods specified in Appendix A of 40 CFR Part 191. The comparisons specified above shall consist of two comparative evaluations that predict radionuclide releases for 100,000 years after repository closure and shall be conducted as follows. First, the sites shall be compared by means of evaluations that emphasize the performance of the natural barriers at the site. Second, the sites shall be compared by means of evaluations that emphasize the performance of the total repository system. These second evaluations shall consider the expected performance of the repository system; be based on the expected performance of waste packages and waste forms, in compliance with the requirements of 10 CFR 60.113, and on the expected hydrologic and geochemical conditions at each site; and take credit for the expected performance of all other engineered components of the repository system. The comparison of isolation capability shall be one of the significant considerations in the recommendation of sites for the development of repositories. The first of the two comparative evaluations specified in the preceding paragraph shall take precedence unless the second comparative evaluation would lead to substantially different recommendations. In the latter case, the two comparative evaluations shall receive comparable consideration. Sites with predicted isolation capabilities that differ by less than a factor of 10, with similar uncertainties, may be assumed to provide equivalent isolation.

### § 960.3-2 Siting process.

The siting process begins with site screening for the identification of potentially acceptable sites. This process was completed for purposes of the first repository before the enactment of the Act, and the identification of such sites was made after enactment in accordance with the provisions of section 116(a) of the Act. The screening process for the identification of potentially acceptable sites for the second and subsequent repositories shall be conducted in accordance with the requirements specified in § 960.3-2-1 of this Subpart. The nomination of any site as suitable for characterization shall follow the process specified in § 960.3-2-2, and such nomination shall be accompanied by an environmental assessment as specified in section 112(b)(1)(E) of the Act. The recommendation of sites as candidate sites for characterization and the recommendation of a characterized site for the development of a repository shall be accomplished in accordance with the requirements specified in §§960.3-2-3 and 960.3-2-4, respectively.

### § 960.3-2-1 Site screening for potentially acceptable sites.

To identify potentially acceptable sites for the development of other than the first repository, the process shall begin with site-screening activities that consider large land masses that contain rock formations of suitable depth, thickness, and lateral extent and have structural, hydrologic, and tectonic features favorable for waste containment and isolation. Within those large land masses, subsequent site-screening activities shall focus on successively smaller and increasingly more suitable land units. This process shall be developed in consultation with the States that contain land units under consideration. It shall be implemented in a sequence of steps that first applies the applicable disqualifying conditions to eliminate land units on the basis of the evidence specified in § 960.3-1-4-1 and in accordance with the application requirements set forth in Appendix III of this Part. After the disqualifying conditions have been applied, the favorable and potentially adverse conditions, as identified for each remaining land unit, shall be evaluated. The presence of favorable conditions shall favor a given land unit, while the presence of potentially adverse conditions shall penalize that land unit. Recognizing that favorable conditions and potentially adverse conditions for different technical guidelines can exist in the same land unit, the DOE shall seek to evaluate the composite favorability of each land unit. Land units that, in the aggregrate, exhibit potentially adverse conditions shall be deferred in favor of land units that exhibit favorable conditions. The siting provisions that require diversity of geohydrologic settings and rock types and consideration of regionality, as specified in §§ 960.3-1-1, 960.3-1-2, and 960.3-1-3, respectively, may be used to discriminate between land units and to establish the range of options in site screening. To identify a site as potentially acceptable, the evidence shall support a finding that the site is not disqualified in accordance with the application requirements set forth in Appendix III of this Part and shall support the decision by the DOE to proceed the continued investigation of the site on the basis of the favorable and potentially adverse conditions identified to date. In continuation of the screening process after such identification and before site nomination, the DOE may defer from further consideration land units or potentially acceptable sites or portions thereof on the basis of additional information or by the application of the siting provisions for diversity of geohydrologic settings, diversity of rock types, and regionality (§§ 960.3-1-1, 960.3-1-2, and 960.3-1-3, respectively). The deferral of potentially acceptable sites will be described in the environmental assessments that accompany the nomination of at least five sites as suitable for characterization. In order to identify potentially acceptable sites for the second and subsequent repositories, the Secretary shall *first* identify the State within which the site is located in a decision-basis document that describes the process and the considerations that led to the identification of such site and that has been issued previously in draft for review and comment by such State. *Second*, when such document is final, the Secretary shall notify the Governor and the legislature of that State and the tribal council of any affected Indian tribe of the potentially acceptable site.

### § 960.3-2-2 Nomination of sites as suitable for characterization.

From the sites identified as potentially acceptable, the Secretary shall nominate at least five sites determined suitable for site characterization for the selection of each repository site. For the second repository, at least three of the sites shall not have been nominated previously. Any site nominated as suitable for characterization for the first repository, but not recommended as a candidate site for characterization, may not be nominated as suitable for characterization for the second repository. The nomination of a site as suitable for characterization shall be accompanied by an environmental assessment as specified in section 112(b)(1)(E) of the Act. Such nomination shall be based on evaluations in accordance with the guidelines of this Part, and the bases and relevant details of those evaluations and of the decision processes involved therein shall be contained in the environmental assessment for the site in the manner specified in this Subpart. The evidence required to support such evaluations and siting decisions is specified in § 960.3-1-4-2.

### § 960.3-2-2-1 Evaluation of all potentially acceptable sites.

*First*, in considering sites for nomination, each of the potentially acceptable sites shall be evaluated on the basis of the disqualifying conditions specified in the technical guidelines of Subparts C and D, in accordance with the application requirements set forth in Appendix III of this part. This evaluation shall support a finding by the DOE that such sites is not disqualified.

### § 960.3-2-2-2 Selection of sites within geohydrologic settings.

*Second*, the siting provision requiring diversity of geohydrologic settings, as specified in § 960.3-1-1, shall be applied to group all potentially acceptable sites according to their geohydrologic settings. *Third*, for those geohydrologic settings that contain more than one potentially acceptable site, the preferred site shall be selected on the basis of a comparative evaluation of all potentially acceptable sites in that setting. This evaluation shall consider the distinguishing characteristics displayed by the potentially acceptable sites within the setting and the related guidelines from Subparts C and D. That is, the appropriate guidelines shall be selected primarily on the basis of the kinds of evidence among sites for which distinguishing characteristics can be identified. Such comparative evaluation shall be made on the basis of the qualifying conditions for those guidelines, considering, on balance, the favorable conditions and potentially adverse conditions identified at each site. Due consideration shall also be given to the siting provisions specifying the basis for site evaluations in § 960.3-1-5, to the extent practicable, and diversity of rock types in § 960.3-1-2, if the circumstances so apply. If less than five geohydrologic settings are available for consideration, the above process shall be used to select two or more preferred sites from those settings that contain more than one potentially acceptable site, as required to obtain the number of sites to be nominated as suitable for characterization. For purposes of the second and subsequent repositories, due consideration shall also be given to the siting provision for regionality as specified in § 960.3-1-3. *Fourth*, each preferred site within a geohydrologic setting shall be evaluated as to whether such site is suitable for the development of a repository under the qualifying condition of each guideline specified in Subparts C and D that does not require site characterization as a prerequisite for the application of such guideline. The guidelines considered appropriate to this evaluation have been selected on the basis of their exclusion under the definition of site characterization as specified in § 960.2. Although the final application of these guidelines, in accordance with the provisions set forth in Appendix III of this part, does not require geologic data from site-characterization activities, such application will require additional data beyond those specified in Appendix IV of this part, which will be obtained concurrently with site characterization. Such guidelines include those specified in § 960.4-2-8-2 (Site Ownership and Control) of Subpart C; §§ 960.5-1(a)(1) and 960.5-1(a)(2) of Subpart D (preclosure system guidelines for radiological safety and environmental quality, socioeconomics, and transportation); and §§ 960.5-2-1 through 960.5-2-7 of Subpart D (Population Density and Distribution, Site Ownership and Control, Meteorology, Offsite Installations and Operations, Environmental Quality, Socioeconomic Impacts, and Transportation). This evaluation shall consider on balance those favorable conditions and potentially adverse conditions identified as such at a preferred site in relation to the qualifying condition of each such guideline. For each such guideline, this evaluation shall focus on the suitability of the site for the development of a repository by considering the activities from the start of site characterization through decommissioning and shall support a finding by the DOE in accordance with the application requirements set forth in Appendix III of this part. *Fifth*, each preferred site within a geohydrologic setting shall be evaluated as to whether such site is suitable for site characterization under the qualifying conditions of those guidelines specified in Subparts C and D that require characterization (i.e., subsurface geologic, hydrologic, and geochemical data gathering). Such guidelines include those specified in § 960.4-1(a) (postclosure system guideline); §§ 960.4-2-1 through 960.4-2-8-1 of Subpart C (Geohydrology, Geochemistry, Rock Characteristics, Climatic Changes, Erosion, Dissolution, Tectonics, Human Interference, and Natural Resources); § 960.5-1(a)(3) (preclosure system guideline for ease and cost of siting, construction, operation, and closure); and § 960.5-2-8 through 960.5-2-11 of Subpart D (Surface Characteristics, Rock Characteristics, Hydrology, and Tectonics). This evaluation shall consider on balance the favorable conditions and potentially adverse conditions identified as such at a preferred site in relation to the qualifying condition of each such guideline. For each such guideline, this evaluation shall focus on the suitability of the site for characterization and shall support a finding by the DOE in accordance with the application requirements set forth in Appendix III of this part.

### § 960.3-2-2-3 Comparative evaluation of all sites proposed for nomination.

*Sixth*, for those potentially acceptable sites to be proposed for nomination, as determined by the process specified in § 960.3-2-2-2, a reasonable comparative evaluation of each such site with all other such sites shall be made. For each site and for each guideline specified in Subparts C and D, the DOE shall summarize the evaluations and findings specified under § 960.3-2-2-1 and under the fourth and fifth provisions of § 960.3-2-2-2. Each such summary shall allow comparisons to be made among sites on this basis of each guideline.

### § 960.3-2-2-4 The environmental assessment.

To document the process specified above, and in compliance with section 112(b)(1)(E) of the Act, an environmental assessment shall be prepared for each site proposed for nomination as suitable for characterization. Each such environmental assessment shall describe the decision process by which such site was proposed for nomination as described in the preceding six steps and shall contain or reference the evidence that supports such process according to the requirements of § 960.3-1-4-2 and Appendix IV of this part. As specified in the Act, each environmental assessment shall include an evaluation of the effects of the site-characterization activities at the site on public health and safety and the environment; a discussion of alternative activities related to site characterization that may be taken to avoid such impact; and an assessment of the regional and local impacts of locating a repository at the site. The draft environmental assessment for each site proposed for nomination as suitable for characterization shall be made available by the DOE for public comment after the Secretary has notified the Governor and legislature of the State in which the site is located, and the governing body of the affected Indian tribe where such site is located, of such impending availability.

### § 960.3-2-2-5 Formal site nomination.

After the final environmental assessments have been prepared, the Secretary shall nominate at least five sites that he determines suitable for site characterization for the selection of a repository site, and, in so doing, he shall cause to have published in the FEDERAL REGISTER a notice specifying the sites so nominated and announcing the availability of the final environmental assessments for such sites. This determination by the Secretary shall be based on the final environmental assessments for such sites, including, in particular, consideration of the available evidence, evaluations, and the resultant findings for the guidelines of Subparts C and D so specified under the fourth and fifth provisions of § 960.3-2-2-2. Before nominating a site, the Secretary shall notify the Governor and legislature of the State in which the site is located, and the governing body of the affected Indian tribe where such site is located, of such nomination and the basis for such nomination.

### § 960.3-2-3 Recommendation of sites for characterization.

After the nomination of at least five sites as suitable for site characterization for the selection of the first repository, the Secretary shall recommend in writing to the President not less than three candidate sites for such characterization. The recommendation decision shall be based on the available geophysical, geologic, geochemical, and hydrologic data, other information; associated evaluations and findings reported in the environmental assessments accompanying the nominations; and the considerations specified below, unless the Secretary certifies that such available data will not be adequate to satisfy applicable requirements of the Act in the absence of further preliminary borings or excavations. On the basis of the evidence and in accordance with the siting provision specifying the basis for site evaluations in § 960.3-1-5, the sites nominated as suitable for characterization shall be considered as to their order of preference as candidate sites for characterization. Subsequently, the siting provisions specifying diversity of geohydrologic settings, diversity of rock types, and, after the first repository, consideration of regionality in §§ 960.3-1-1, 960.3-1-2, and 960.3-1-3, respectively, shall be considered to determine a final order of preference for the characterization of such sites. Considering this order of preference together with the available siting alternatives specified in the Act, the sites recommended as candidate sites for characterization shall offer, on balance, the most advantageous combination of characteristics and conditions for the successful development of repositories at such sites. The process for the recommendation of sites as candidate sites for characterization for the selection of any subsequent repository shall be the same as that specified above for the first repository.

### § 960.3-2-4 Recommendation of sites for the development of repositories.

After completion of site characterization and nongeologic data gathering activities at the candidate sites for the development of the first repository, or from all of the characterized sites for the development of subsequent repositories, the candidate sites shall be compared with each other on the basis of the guidelines specified in Subparts C and D according to the siting provision specifying the basis for site evaluations in § 960.3-1-5. This comparison shall lead to a recommendation by the Secretary to the President of a site for the development of a repository. Together with any recommendation to the President to approve a site for the development of a repository, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation pursuant to the requirements specified in section 114(a)(1) of the Act, including an environmental impact statement prepared in accordance with the provisions of sections 114(a)(1)(D) and 114(f) of the Act. The environmental impact statement shall include the results of the comparative evaluation specified above and a description of the decision process that resulted in the selection of the candidate site recommended for the development of such repository.

### § 960.3-3 Consultation.

The DOE shall provide to designated officials of the affected States and to the governing bodies of any affected Indian tribe timely and complete information regarding determinations or plans made with respect to the siting, site characterization, design, development, construction, operation, closure, decommissioning, licensing, or regulation of a repository. Written responses to written requests for information from the designated officials of affected States or affected Indian tribes will be provided within 30 days after receipt of the written requests. In performing any study of an area for the purpose of determining the suitability of such area for the development of a repository, the DOE shall consult and cooperate with the Governor and the legislature of an affected State and the governing body of an affected Indian tribe in an effort to resolve concerns regarding public health and safety, environmental impacts, socioeconomic impacts, and technical aspects of the siting process. After notifying affected States and affected Indian tribes that potentially acceptable sites have been identified, or that a site has been approved for characterization, the DOE shall seek to enter into binding written agreements with such affected States or affected Indian tribes in accordance with the requirements of the Act. The DOE shall also consult, as appropriate, with other Federal agencies.

### § 960.3-4 Environmental impacts.

Environmental impacts shall be considered by the DOE throughout the site characterization, site selection, and repository development process. The DOE shall mitigate significant adverse environmental impacts, to the extent practicable, during site characterization and repository construction, operation, closure, and decommissioning.

## Subpart C—Postclosure Guidelines

### § 960.4 Postclosure guidelines.

The guidelines in this subpart specify the factors to be considered in evaluating and comparing sites on the basis of expected repository performance after closure. The postclosure guidelines are separated into a system guideline and eight technical guidelines. The system guideline establishes waste containment and isolation requirements that are based on NRC and EPA regulations. These requirements must be met by the repository system, which contains natural barriers and engineered barriers. The engineered barriers will be designed to complement the natural barriers, which provide the primary means for waste isolation.

### § 960.4-1 System guideline.

(a) *Qualifying Condition.* The geologic setting at the site shall allow for the physical separation of radioactive waste from the accessible environment after closure in accordance with the requirements of 40 CFR Part 191, Subpart B, as implemented by the provisions of 10 CFR Part 60. The geologic setting at the site will allow for the use of engineered barriers to ensure compliance with the requirements of 40 CFR Part 191 and 10 CFR Part 60 (see Appendix I of this part).

### § 960.4-2 Technical guidelines.

The technical guidelines in this subpart set forth qualifying, favorable, potentially adverse, and, in five guidelines, disqualifying conditions on the characteristics, processes, and events that may influence the performance of a repository system after closure. The favorable conditions and the potentially adverse conditions under each guideline are *not* listed in any assumed order of importance. Potentially adverse conditions will be considered if they affect waste isolation within the controlled area even though such conditions may occur outside the controlled area. The technical guidelines that follow establish conditions that shall be considered in determining compliance with the qualifying condition of the postclosure system guideline. For each technical guideline, an evaluation of qualification or disqualification shall be made in accordance with the requirements specified in Subpart B.

### § 960.4-2-1 Geohydrology.

(a) *Qualifying Condition.* The present and expected geohydrologic setting of a site shall be compatible with waste containment and isolation. The geohydrologic setting, considering the characteristics of and the processes operating within the geologic setting, shall permit compliance with (1) the requirements specified in § 960.4-1 for radionuclide releases to the accessible environment and (2) the requirements specified in 10 CFR 60.113 for radionuclide releases from the engineered-barrier system using reasonably available technology.

(b) *Favorable Conditions.* (1) Site conditions such that the pre-waste-emplacement ground-water travel time along any path of likely radionuclide travel from the disturbed zone to the accessible environment would be more than 10,000 years.

(2) The nature and rates of hydrologic processes operating within the geologic setting during the Quaternary Period would, if continued into the future, not affect or would favorably affect the ability of the geologic repository to isolate the waste during the next 100,000 years.

(3) Sites that have stratigraphic, structural, and hydrologic features such that the geohydrologic system can be readily characterized and modeled with reasonable certainty.

(4) For disposal in the saturated zone, at least one of the following pre-waste-emplacement conditions exists:

(i) A host rock and immediately surrounding geohydrologic units with low hydraulic conductivities.

(ii) A downward or predominantly horizontal hydraulic gradient in the host rock and in the immediately surrounding geohydrologic units.

(iii) A low hydraulic gradient in and between the host rock and the immediately surrounding geohydrologic units.

(iv) High effective porosity together with low hydraulic conductivity in rock units along paths of likely radionuclide travel between the host rock and the accessible environment.

(5) For disposal in the unsaturated zone, at least one of the following pre-waste-emplacement conditions exists:

(i) A low and nearly constant degree of saturation in the host rock and in the immediately surrounding geohydrologic units.

(ii) A water table sufficiently below the underground facility such that the fully saturated voids continuous with the water table do not encounter the host rock.

(iii) A geohydrologic unit above the host rock that would divert the downward infiltration of water beyond the limits of the emplaced waste.

(iv) A host rock that provides for free drainage.

(v) A climatic regime in which the average annual historical precipitation is a small fraction of the average annual potential evapotranspiration.

NOTE: The DOE will, in accordance with the general principles set forth in § 960.1 of these regulations, revise the guidelines as necessary, to ensure consistency with the final NRC regulations on the unsaturated zone, which were published as a proposed rule on February 16, 1984, in 49 FR 5934.

(c) *Potentially Adverse Conditions.* (1) Expected changes in geohydrologic conditions—such as changes in the hydraulic gradient, the hydraulic conductivity, the effective porosity, and the ground-water flux through the host rock and the surrounding geohydrologic units—sufficient to significantly increase the transport of radionuclides to the accessible environment as compared with pre-waste-emplacement conditions.

(2) The presence of ground-water sources, suitable for crop irrigation or human consumption without treatment, along ground-water flow paths from the host rock to the accessible environment.

(3) The presence in the geologic setting of stratigraphic or structural features—such as dikes, sills, faults, shear zones, folds, dissolution effects, or brine pockets—if their presence could significantly contribute to the difficulty of characterizing or modeling the geohydrologic system.

(d) *Disqualifying Condition.* A site shall be disqualified if the pre-waste-emplacement ground-water travel time from the disturbed zone to the accessible environment is expected to be less than 1,000 years along any pathway of likely and significant radionuclide travel.

### § 960.4-2-2 Geochemistry.

(a) *Qualifying Condition.* The present and expected geochemical characteristics of a site shall be compatible with waste containment and isolation. Considering the likely chemical interactions among radionuclides, the host rock, and the ground water, the characteristics of and the processes operating within the geologic setting shall permit compliance with (1) the requirements specified in § 960.4-1 for radionuclide releases to the accessible environment and (2) the requirements specified in 10 CFR 60.113 for radionuclide releases from the engineered-barrier system using reasonably available technology.

(b) *Favorable Conditions.* (1) The nature and rates of the geochemical processes operating within the geologic setting during the Quaternary Period would, if continued into the future, not affect or would favorably affect the ability of the geologic repository to isolate the waste during the next 100,000 years.

(2) Geochemical conditions that promote the precipitation, diffusion into the rock matrix, or sorption of radionuclides; inhibit the formation of particulates, colloids, inorganic complexes, or organic complexes that increase the mobility of radionuclides; or inhibit the transport of radionuclides by particulates, colloids, or complexes.

(3) Mineral assemblages that, when subjected to expected repository conditions, would remain unaltered or would alter to mineral assemblages with equal or increased capability to retard radionuclide transport.

(4) A combination of expected geochemical conditions and a volumetric flow rate of water in the host rock that would allow less than 0.001 percent per year of the total radionuclide inventory in the repository at 1,000 years to be dissolved.

(5) Any combination of geochemical and physical retardation processes that would decrease the predicted peak cumulative releases of radionuclides to the accessible environment by a factor of 10 as compared to those predicted on the basis of ground-water travel time without such retardation.

(c) *Potentially Adverse Conditions.* (1) Ground-water conditions in the host rock that could affect the solubility or the chemical reactivity of the engineered-barrier system to the extent that the expected repository performance could be compromised.

(2) Geochemical processes or conditions that could reduce the sorption of radionuclides or degrade the rock strength.

(3) Pre-waste-emplacement ground-water conditions in the host rock that are chemically oxidizing.

### § 960.4-2-3 Rock characteristics.

(a) *Qualifying condition.* The present and expected characteristics of the host rock and surrounding units shall be capable of accommodating the thermal, chemical, mechanical, and radiation stresses expected to be induced by repository construction, operation, and closure and by expected interactions among the waste, host rock, ground water, and engineered components. The characteristics of and the processes operating within the geologic setting shall permit compliance with (1) the requirements specified in § 960.4-1 for radionuclide releases to the accessible environment and (2) the requirements set forth in 10 CFR 60.113 for radionuclide releases from the engineered-barrier system using reasonably available technology.

(b) *Favorable Conditions.* (1) A host rock that is sufficiently thick and laterally extensive to allow significant flexibility in selecting the depth, configuration, and location of the underground facility to ensure isolation.

(2) A host rock with a high thermal conductivity, a low coefficient of thermal expansion, or sufficient ductility to seal fractures induced by repository construction, operation, or closure or by interactions among the waste, host rock, ground water, and engineered components.

(c) *Potentially Adverse Conditions.* (1) Rock conditions that could require engineering measures beyond reasonably available technology for the construction, operation, and closure of the repository, if such measures are necessary to ensure waste containment or isolation.

(2) Potential for such phenomena as thermally induced fractures, the hydration or dehydration of mineral components, brine migration, or other physical, chemical, or radiation-related phenomena that could be expected to affect waste containment or isolation.

(3) A combination of geologic structure, geochemical and thermal properties, and hydrologic conditions in the

host rock and surrounding units such that the heat generated by the waste could significantly decrease the isolation provided by the host rock as compared with pre-waste-emplacement conditions.

### § 960.4-2-4 Climatic changes.

(a) *Qualifying Condition.* The site shall be located where future climatic conditions will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1. In predicting the likely future climatic conditions at a site, the DOE will consider the global, regional, and site climatic patterns during the Quaternary Period, considering the geomorphic evidence of the climatic conditions in the geologic setting.

(b) *Favorable Conditions.* (1) A surface-water system such that expected climatic cycles over the next 100,000 years would not adversely affect waste isolation.

(2) A geologic setting in which climatic changes have had little effect on the hydrologic system throughout the Quaternary Period.

(c) *Potentially Adverse Conditions.* (1) Evidence that the water table could rise sufficiently over the next 10,000 years to saturate the underground facility in a previously unsaturated host rock.

(2) Evidence that climatic changes over the next 10,000 years could cause perturbations in the hydraulic gradient, the hydraulic conductivity, the effective porosity, or the ground-water flux through the host rock and the surrounding geohydrologic units, sufficient to significantly increase the transport of radionuclides to the accessible environment.

### § 960.4-2-5 Erosion.

(a) *Qualifying Condition.* The site shall allow the underground facility to be placed at a depth such that erosional processes acting upon the surface will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1. In predicting the likelihood of potentially disruptive erosional processes, the DOE will consider the climatic, tectonic, and geomorphic evidence of rates and patterns of erosion in the geologic setting during the Quaternary Period.

(b) *Favorable Conditions.* (1) Site conditions that permit the emplacement of waste at a depth of at least 300 meters below the directly overlying ground surface.

(2) A geologic setting where the nature and rates of the erosional processes that have been operating during the Quaternary Period are predicted to have less than one chance in 10,000 over the next 10,000 years of leading to releases of radionuclides to the accessible environment.

(3) Site conditions such that waste exhumation would not be expected to occur during the first one million years after repository closure.

(c) *Potentially Adverse Conditions.* (1) A geologic setting that shows evidence of extreme erosion during the Quaternary Period.

(2) A geologic setting where the nature and rates of geomorphic processes that have been operating during the Quaternary Period could, during the first 10,000 years after closure, adversely affect the ability of the geologic repository to isolate the waste.

(d) *Disqualifying Condition.* The site shall be *disqualified* if site conditions do not allow all portions of the underground facility to be situated at least 200 meters below the directly overlying ground surface.

### § 960.4-2-6 Dissolution.

(a) *Qualifying Condition.* The site shall be located such that any subsurface rock dissolution will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1. In predicting the likelihood of dissolution within the geologic setting at a site, the DOE will consider the evidence of dissolution within that setting during the Quaternary Period, including the locations and characteristics of dissolution fronts or other dissolution features, if identified.

(b) *Favorable Condition.* No evidence that the host rock within the site was subject to significant dissolution during the Quaternary Period.

(c) *Potentially Adverse Condition.* Evidence of dissolution within the geologic setting—such as breccia pipes, dissolution cavities, significant volumetric reduction of the host rock or surrounding strata, or any structural collapse—such that a hydraulic interconnection leading to a loss of waste isolation could occur.

(d) *Disqualifying Condition.* The site shall be *disqualified* if it is likely that, during the first 10,000 years after closure, active dissolution, as predicted on the basis of the geologic record, would result in a loss of waste isolation.

### § 960.4-2-7 Tectonics.

(a) *Qualifying Condition.* The site shall be located in a geologic setting where future tectonic processes or events will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1. In predicting the likelihood of potentially disruptive tectonic processes or events, the DOE will consider the structural, stratigraphic, geophysical, and seismic evidence for the nature and rates of tectonic processes and events in the geologic setting during the Quaternary Period.

(b) *Favorable Condition.* The nature and rates of igneous activity and tectonic processes (such as uplift, subsidence, faulting, or folding), if any, operating within the geologic setting during the Quaternary Period would, if continued into the future, have less than one chance in 10,000 over the first 10,000 years after closure of leading to releases of radionuclides to the accessible environment.

(c) *Potentially Adverse Conditions.* (1) Evidence of active folding, faulting, diapirism, uplift, subsidence, or other tectonic processes or igneous activity within the geologic setting during the Quaternary Period.

(2) Historical earthquakes within the geologic setting of such magnitude and intensity that, if they recurred, could affect waste containment or isolation.

(3) Indications, based on correlations of earthquakes with tectonic processes and features, that either the frequency of occurrence or the magnitude of earthquakes within the geologic setting may increase.

(4) More-frequent occurrences of earthquakes or earthquakes of higher magnitude than are representative of the region in which the geologic setting is located.

(5) Potential for natural phenomena such as landslides, subsidence, or volcanic activity of such magnitudes that they could create large-scale surface-water impoundments that could change the regional ground-water flow system.

(6) Potential for tectonic deformations—such as uplift, subsidence, folding, or faulting—that could adversely affect the regional ground-water flow system.

(d) *Disqualifying Condition.* A site shall be disqualified if, based on the geologic record during the Quaternary Period, the nature and rates of fault movement or other ground motion are expected to be such that a loss of waste isolation is likely to occur.

### § 960.4-2-8 Human interference.

The site shall be located such that activities by future generations at or near the site will not be likely to affect waste containment and isolation. In assessing the likelihood of such activities, the DOE will consider the estimated effectiveness of the permanent markers and records required by 10 CFR Part 60, taking into account site-specific factors, as stated in §§ 960.4-2-8-1 and 960.4-2-8-2, that could compromise their continued effectiveness.

### § 960.4-2-8-1 Natural resources.

(a) *Qualifying Condition.* This site shall be located such that—considering permanent markers and records and reasonable projections of value, scarcity, and technology—the natural resources, including ground water suitable for crop irrigation or human consumption without treatment, present at or near the site will not be likely to give rise to interference activities that would lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1.

(b) *Favorable Conditions.* (1) No known natural resources that have or are projected to have in the foreseeable future a value great enough to be considered a commercially extractable resource.

(2) Ground water with 10,000 parts per million or more of total dissolved solids along any path of likely radionuclide travel from the host rock to the accessible environment.

(c) *Potentially Adverse Conditions.* (1) Indications that the site contains naturally occurring materials, whether or not actually identified in such form that (i) economic extraction is potentially feasible during the foreseeable future or (ii) such materials have a greater gross value, net value, or commercial potential than the average for other areas of similar size that are representative of, and located in, the geologic setting.

(2) Evidence of subsurface mining or extraction for resources within the site if it could affect waste containment or isolation.

(3) Evidence of drilling within the site for any purpose other than repository-site evaluation to a depth sufficient to affect waste containment and isolation.

(4) Evidence of a significant concentration of any naturally occurring material that is not widely available from other sources.

(5) Potential for foreseeable human activities—such as ground-water withdrawal, extensive irrigation, subsurface injection of fluids, underground pumped storage, military activities, or the construction of large-scale surface-water impoundments—that could adversely change portions of the ground-water flow system important to waste isolation.

(d) *Disqualifying Conditions.* A site shall be disqualified if—

(1) Previous exploration, mining, or extraction activities for resources of commercial importance at the site have created significant pathways between the projected underground facility and the accessible environment; or

(2) Ongoing or likely future activities to recover presently valuable natural mineral resources outside the controlled area would be expected to lead to an inadvertent loss of waste isolation.

### § 960.4-2-8-2 Site ownership and control.

(a) *Qualifying Condition.* The site shall be located on land for which the DOE can obtain, in accordance with the requirements of 10 CFR Part 60, ownership, surface and subsurface rights, and control of access that are required in order that potential surface and subsurface activities at the site will not be likely to lead to radionuclide releases greater than those allowable under the requirements specified in § 960.4-1.

(b) *Favorable Condition.* Present ownership and control of land and all surface and subsurface rights by the DOE.

(c) *Potentially Adverse Condition.* Projected land-ownership conflicts that cannot be successfully resolved through voluntary purchase-sell agreements, nondisputed agency-to-agency transfers of title, or Federal condemnation proceedings.

## Subpart D—Preclosure Guidelines

### § 960.5 Preclosure guidelines.

The guidelines in this subpart specify the factors to be considered in evaluating and comparing sites on the basis of expected repository performance before closure. The preclosure guidelines are separated into three system guidelines and eleven technical guidelines.

### § 960.5-1 System guidelines.

(a) *Qualifying Conditions*—(1) *Preclosure Radiological Safety.* Any projected radiological exposures of the general public and any projected releases of radioactive materials to restricted and unrestricted areas during repository operation and closure shall meet the applicable safety requirements set forth in 10 CFR Part 20, 10 CFR Part 60, and 40 CFR 191, Subpart A (see Appendix II of this part).

(2) *Environment, Socioeconomics, and Transportation.* During repository siting, construction, operation, closure, and decommissioning the public and the environment shall be adequately protected from the hazards posed by the disposal of radioactive waste.

(3) *Ease and Cost of Siting, Construction, Operation, and Closure.* Repository siting, construction, operation, and closure shall be demonstrated to be technically feasible on the basis of reasonably available technology, and the associated costs shall be demonstrated to be reasonable relative to other available and comparable siting options.

### § 960.5-2 Technical guidelines.

The technical guidelines in this subpart set forth qualifying, favorable, potentially adverse, and, in seven guidelines, disqualifying conditions for the characteristics, processes, and events that influence the suitability of a site relative to the preclosure system guidelines. These conditions are separated into three main groups: Preclosure radiological safety; environment, socioeconomics, and transportation; and ease and cost of siting, construction, operation, and closure. The first group includes conditions on population density and distribution, site ownership and control, meteorology, and offsite installations and operations. The second group includes conditions related to environmental quality and socioeconomic impacts in areas potentially affected by a repository and to the transportation of waste to a repository site. The third group includes conditions on the surface characteristics of the site, the characteristics of the host rock and surrounding strata, hydrology, and tectonics. The individual technical guidelines within each group, as well as the favorable conditions and the potentially adverse conditions under each guideline, are not listed in any assumed order of importance. The technical guidelines that follow establish conditions that shall be considered in determining compliance with the qualifying conditions of the preclosure system guidelines. For each technical guideline, an evaluation of qualification or disqualification shall be made in accordance with the requirements specified in Subpart B.

## PRECLOSURE RADIOLOGICAL SAFETY

### § 960.5-2-1 Population Density and Distribution.

(a) *Qualifying Condition.* The site shall be located such that, during repository operation and closure, (1) the expected average radiation dose to members of the public within any highly populated area will not be likely to exceed a small fraction of the limits allowable under the requirements specified in § 960.5-1(a)(1), and (2) the expected radiation dose to any member of the public in an unrestricted area will not be likely to exceed the limit allowable under the requirements specified in § 960.5-1(a)(1).

(b) *Favorable Conditions.* (1) A low population density in the general region of the site.

(2) Remoteness of site from highly populated areas.

(c) *Potentially Adverse Conditions.* (1) High residential, seasonal, or daytime population density within the projected site boundaries.

(2) Proximity of the site to highly populated areas, or to areas having at least 1,000 individuals in an area 1 mile by 1 mile as defined by the most recent decennial count of the U.S. census.

(d) *Disqualifying Conditions.* A site shall be *disqualified* if—

(1) Any surface facility of a repository would be located in a highly populated area; or

(2) Any surface facility of a repository would be located adjacent to an area 1 mile by 1 mile having a population of not less than 1,000 individuals as enumerated by the most recent U.S. census; or

(3) The DOE could not develop an emergency preparedness program which meets the requirements specified in DOE Order 5500.3 (Reactor and Non-Reactor Facility Emergency Planning, Preparedness, and Response Program for Department of Energy Operations) and related guides or, when issued by the NRC, in 10 CFR Part 60, Subpart I, "Emergency Planning Criteria."

**§ 960.5–2–2 Site Ownership and Control.**

(a) *Qualifying Condition.* The site shall be located on land for which the DOE can obtain, in accordance with the requirements of 10 CFR 60.121, ownership, surface and subsurface rights, and control of access that are required in order that surface and subsurface activities during repository operation and closure will not be likely to lead to radionuclide releases to an unrestricted area greater than those allowable under the requirements specified in § 960.5-1(a)(1).

(b) *Favorable Condition.* Present ownership and control of land and all surface and subsurface mineral and water rights by the DOE.

(c) *Potentially Adverse Condition.* Projected land-ownership conflicts that cannot be successfully resolved through voluntary purchase-sell agreements, nondisputed agency-to-agency transfers of title, or Federal condemnation proceedings.

**§ 960.5–2–3 Meteorology.**

(a) *Qualifying Condition.* The site shall be located such that expected meteorological conditions during repository operation and closure will not be likely to lead to radionuclide releases to an unrestricted area greater than those allowable under the requirements specified in § 960.5-1(a)(1).

(b) *Favorable Condition.* Prevailing meteorological conditions such that any radioactive releases to the atmosphere during repository operation and closure would be effectively dispersed, thereby reducing significantly the likelihood of unacceptable exposure to any member of the public in the vicinity of the repository.

(c) *Potentially Adverse Conditions.* (1) Prevailing meteorological conditions such that radioactive emissions from repository operation or closure could be preferentially transported toward localities in the vicinity of the repository with higher population densities than are the average for the region.

(2) History of extreme weather phenomena—such as hurricanes, tornadoes, severe floods, or severe and frequent winter storms—that could significantly affect repository operation or closure.

**§ 960.5–2–4 Offsite installations and operations.**

(a) *Qualifying Condition.* The site shall be located such that present projected effects from nearby industrial, transportation, and military installations and operations, including atomic energy defense activities, (1) will not significantly affect repository siting, construction, operation, closure, or decommissioning or can be accommodated by engineering measures and (2), when considered together with emissions from repository operation and closure, will not be likely to lead to radionuclide releases to an unrestricted area greater than those allowable under the requirements specified in § 960.5-1(a)(1).

(b) *Favorable Condition.* Absence of contributing radioactive releases from other nuclear installations and operations that must be considered under the requirements of 40 CFR 191, Subpart A.

(c) *Potentially Adverse Conditions.* (1) The presence of nearby potentially hazardous installations or operations that could adversely affect repository operation or closure.

(2) Presence of other nuclear installations and operations, subject to the requirements of 40 CFR Part 190 or 40 CFR 191, Subpart A, with actual or projected releases near the maximum value permissible under those standards.

(d) *Disqualifying Condition.* A site shall be disqualified if atomic energy defense activities in proximity to the site are expected to conflict irreconcilably with repository siting, construction, operation, closure, or decommissioning.

### ENVIRONMENT, SOCIOECONOMICS, AND TRANSPORTATION

**§ 960.5–2–5 Environmental quality.**

(a) *Qualifying Condition.* The site shall be located such that (1) the quality of the environment in the affected area during this and future generations will be adequately protected during repository siting, construction, operation, closure, and decommissioning, and projected environmental impacts in the affected area can be mitigated to an acceptable degree, taking into account programmatic, technical, social, economic, and environmental factors; and (2) the requirements specified in § 960.5-1(a)(2) can be met.

(b) *Favorable Conditions.* (1) Projected ability to meet, within time constraints, all Federal, State, and local procedural and substantive environmental requirements applicable to the site and the activities proposed to take place thereon.

(2) Potential significant adverse environmental impacts to present and future generations can be mitigated to an insignificant level through the application of reasonable measures, taking into account programmatic, technical, social, economic, and environmental factors.

(c) *Potentially Adverse Conditions.* (1) Projected major conflict with applicable Federal, State, or local environmental requirements.

(2) Projected significant adverse environmental impacts that cannot be avoided or mitigated.

(3) Proximity to, or projected significant adverse environmental impacts of the repository or its support facilities on, a component of the National Park System, the National Wildlife Refuge System, the National Wild and Scenic Rivers System, the National Wilderness Preservation System, or National Forest Land.

(4) Proximity to, and projected significant adverse environmental impacts of the repository or its support facilities on, a significant State or regional protected resource area, such as a State park, a wildlife area, or a historical area.

(5) Proximity to, and projected significant adverse environmental impacts of the repository and its support facilities on, a significant Native American resource, such as a major Indian religious site, or other sites of unique cultural interest.

(6) Presence of critical habitats for threatened or endangered species that may be compromised by the repository or its support facilities.

(d) *Disqualifying Conditions.* Any of the following conditions shall *disqualify* a site:

(1) During repository siting, construction, operation, closure, or decommissioning the quality of the environment in the affected area could not be adequately protected or projected environmental impacts in the affected area could not be mitigated to an acceptable degree, taking into account programmatic, technical, social, economic, and environmental factors.

(2) Any part of the restricted area or repository support facilities would be located within the boundaries of a component of the National Park System, the National Wildlife Refuge System, the National Wilderness Preservation System, or the National Wild and Scenic Rivers System.

(3) The presence of the restricted area or the repository support facilities would conflict irreconcilably with the previously designated resource-preservation use of a component of the National Park System, the National Wildlife Refuge System, the National Wilderness Preservation System, the National Wild and Scenic Rivers System, or National Forest Lands, or any comparably significant State protected resource that was dedicated to resource preservation at the time of the enactment of the Act.

### § 960.5-2-6 Socioeconomic impacts.

(a) *Qualifying Condition.* The site shall be located such that (1) any significant adverse social and/or economic impacts induced in communities and surrounding regions by repository siting, construction, operation, closure, and decommissioning can be offset by reasonable mitigation or compensation, as determined by a process of analysis, planning, and consultation among the DOE, affected State and local government jurisdictions, and affected Indian tribes; and (2) the requirements specified in § 960.5-1(a)(2) can be met.

(b) *Favorable Conditions.* (1) Ability of an affected area to absorb the project-related population changes without significant disruptions of community services and without significant impacts on housing supply and demand.

(2) Availability of an adequate labor force in the affected area.

(3) Projected net increases in employment and business sales, improved

community services, and increased government revenues in the affected area.

(4) No projected substantial disruption of primary sectors of the economy of the affected area.

(c) *Potentially Adverse Conditions.* (1) Potential for significant repository-related impacts on community services, housing supply and demand, and the finances of State and local government agencies in the affected area.

(2) Lack of an adequate labor force in the affected area.

(3) Need for repository-related purchase or acquisition of water rights, if such rights could have significant adverse impacts on the present or future development of the affected area.

(4) Potential for major disruptions of primary sectors of the economy of the affected area.

(d) *Disqualifying Condition.* A site shall be disqualified if repository construction, operation, or closure would significantly degrade the quality, or significantly reduce the quantity, of water from major sources of offsite supplies presently suitable for human consumption or crop irrigation and such impacts cannot be compensated for, or mitigated by, reasonable measures.

### § 960.5-2-7 Transportation.

(a) *Qualifying Condition.* The site shall be located such that (1) the access routes constructed from existing local highways and railroads to the site (i) will not conflict irreconcilably with the previously designated use of any resource listed in § 960.5-2-5(d)(2) and (3); (ii) can be designed and constructed using reasonably available technology; (iii) will not require transportation system components to meet performance standards more stringent than those specified in the applicable DOT and NRC regulations, nor require the development of new packaging containment technology; (iv) will allow transportation operations to be conducted without causing an unacceptable risk to the public or unacceptable environmental impacts, taking into account programmatic, technical, social, economic, and environmental factors; and (2) the requirements of § 960.5-1(a)(2) can be met.

(b) *Favorable Conditions.* (1) Availability of access routes from local existing highways and railroads to the site which have any of the following characteristics:

(i) Such routes are relatively short and economical to construct as compared to access routes for other comparable siting options.

(ii) Federal condemnation is not required to acquire rights-of-way for the access routes.

(iii) Cuts, fills, tunnels, or bridges are not required.

(iv) Such routes are free of sharp curves or steep grades and are not likely to be affected by landslides or rock slides.

(v) Such routes bypass local cities and towns.

(2) Proximity to local highways and railroads that provide access to regional highways and railroads and are adequate to serve the repository without significant upgrading or reconstruction.

(3) Proximity to regional highways, mainline railroads, or inland waterways that provide access to the national transportation system.

(4) Availability of a regional railroad system with a minimum number of interchange points at which train crew and equipment changes would be required.

(5) Total projected life-cycle cost and risk for transportation of all wastes designated for the repository site which are significantly lower than those for comparable siting options, considering locations of present and potential sources of waste, interim storage facilities, and other repositories.

(6) Availability of regional and local carriers—truck, rail, and water—which have the capability and are willing to handle waste shipments to the repository.

(7) Absence of legal impediment with regard to compliance with Federal regulations for the transportation of waste in or through the affected State and adjoining States.

(8) Plans, procedures, and capabilities for response to radioactive waste transportation accidents in the affected State that are completed or being developed.

(9) A regional meteorological history indicating that significant transportation disruptions would not be routine seasonal occurrences.

(c) *Potentially Adverse Conditions.* (1) Access routes to existing local highways and railroads that are expensive to construct relative to comparable siting options.

(2) Terrain between the site and existing local highways and railroads such that steep grades, sharp switchbacks, rivers, lakes, landslides, rock slides, or potential sources of hazard to incoming waste shipments will be encountered along access routes to the site.

(3) Existing local highways and railroads that could require significant reconstruction or upgrading to provide adequate routes to the regional and national transportation system.

(4) Any local condition that could cause the transportation-related costs, environmental impacts, or risk to public health and safety from waste transportation operations to be significantly greater than those projected for other comparable siting options.

## EASE AND COST OF SITING, CONSTRUCTION, OPERATION, AND CLOSURE

### § 960.5-2-8 Surface characteristics.

(a) *Qualifying Condition.* The site shall be located such that, considering the surface characteristics and conditions of the site and surrounding area, including surface-water systems and the terrain, the requirements specified in § 960.5-1(a)(3) can be met during repository siting, construction, operation, and closure.

(b) *Favorable Conditions.* (1) Generally flat terrain.

(2) Generally well-drained terrain.

(c) *Potentially Adverse Condition.* Surface characteristics that could lead to the flooding of surface or underground facilities by the occupancy and modification of flood plains, the failure of existing or planned man-made surface-water impoundments, or the failure of engineered components of the repository.

### § 960.5-2-9 Rock characteristics.

(a) *Qualifying Condition.* The site shall be located such that (1) the thickness and lateral extent and the characteristics and composition of the host rock will be suitable for accommodation of the underground facility; (2) repository construction, operation, and closure will not cause undue hazard to personnel, and (3) the requirements specified in § 960.5-1(a)(3) can be met.

(b) *Favorable Conditions.* (1) A host rock that is sufficiently thick and laterally extensive to allow significant flexibility in selecting the depth, configuration, and location of the underground facility.

(2) A host rock with characteristics that would require minimal or no artificial support for underground openings to ensure safe repository construction, operation, and closure.

(c) *Potentially Adverse Conditions.* (1) A host rock that is suitable for repository construction, operation, and closure, but is so thin or laterally restricted that little flexibility is available for selecting the depth, configuration, or location of an underground facility.

(2) In situ characteristics and conditions that could require engineering measures beyond reasonably available technology in the construction of the shafts and underground facility.

(3) Geomechanical properties that could necessitate extensive maintenance of the underground openings during repository operation and closure.

(4) Potential for such phenomena as thermally induced fracturing, the hydration and dehydration of mineral components, or other physical, chemical, or radiation-related phenomena that could lead to safety hazards or difficulty in retrieval during repository operation.

(5) Existing faults, shear zones, pressurized brine pockets, dissolution effects, or other stratigraphic or structural features that could compromise the safety of repository personnel because of water inflow or construction problems.

(d) *Disqualifying Condition.* The site shall be *disqualified* if the rock characteristics are such that the activities associated with repository construction, operation, or closure are predicted to cause significant risk to the health and safety of personnel, taking into account mitigating measures that use reasonably available technology.

**§ 960.5-2-10 Hydrology.**

(a) *Qualifying Condition.* The site shall be located such that the geohydrologic setting of the site will (1) be compatible with the activities required for repository construction, operation, and closure; (2) not compromise the intended functions of the shaft liners and seals; and (3) permit the requirements specified in § 960.5-1(a)(3) to be met.

(b) *Favorable Conditions.* (1) Absence of aquifers between the host rock and the land surface.

(2) Absence of surface-water systems that could potentially cause flooding of the repository.

(3) Availability of the water required for repository construction, operation, and closure.

(c) *Potentially Adverse Condition.* Ground-water conditions that could require complex engineering measures that are beyond reasonably available technology for repository construction, operation, and closure.

(d) *Disqualifying Condition.* A site shall be disqualified if, based on expected ground-water conditions, it is likely that engineering measures that are beyond reasonably available technology will be required for exploratory-shaft construction or for repository construction, operation, or closure.

**§ 960.5-2-11 Tectonics.**

(a) *Qualifying Conditions.* The site shall be located in a geologic setting in which any projected effects of expected tectonic phenomena or igneous activity on repository construction, operation, or closure will be such that the requirements specified in § 960.5-1(a)(3) can be met.

(b) *Favorable Condition.* The nature and rates of faulting, if any, within the geologic setting are such that the magnitude and intensity of the associated seismicity are significantly less than those generally allowable for the construction and operation of nuclear facilities.

(c) *Potentially Adverse Conditions.* (1) Evidence of active faulting within the geologic setting.

(2) Historical earthquakes or past man-induced seismicity that, if either were to recur, could produce ground motion at the site in excess of reasonable design limits.

(3) Evidence, based on correlations of earthquakes with tectonic processes and features, (e.g., faults) within the geologic setting, that the magnitude of earthquakes at the site during repository construction, operation, and closure may be larger then predicted from historical seismicity.

(d) *Disqualifying Condition.* A site shall be disqualified if, based on the expected nature and rates of fault movement or other ground motion, it is likely that engineering measures that are beyond reasonably available technology will be required for exploratory-shaft construction or for repository construction, operation, or closure.

## Appendix I—NRC and EPA Requirements for Postclosure Repository Performance

Under proposed 40 CFR Part 191, Subpart B—*Environmental Standards for Disposal,* § 191.13, "Containment Requirements", specifies that for 10,000 years after disposal (a) releases of radioactive materials to the accessible environment that are estimated to have more than one chance in 100 of occurring over a 10,000 year period ("reasonably foreseeable releases") shall be projected to be less than the quantities permitted by Table 2 of that regulation's Appendix; and (b) for "very unlikely releases" (i.e., those estimated to have between one chance in 100 and one chance in 10,000 of occurring over a 10,000 year period), the limits specified in Table 2 would be multiplied by 10. The basis for Table 2 is an upper limit on long term risks of 1,000 health effects over 10,000 years for a repository containing wastes generated from 100,000 metric tons of heavy metal of reactor fuel. For releases involving more than one radionuclide, the allowed release for each radionuclide is reduced to the fraction of its limit that insures that the overall limit on harm is not exceeded. Additionally, to provide confidence needed for compliance with the containment requirements specified above, § 191.14, "Assurance Requirements", specifies the disposal of radioactive waste in accordance with seven requirements, relating to prompt disposal of waste, selection and design of disposal systems to keep releases to the accessible environment as small as reasonably achievable, engineered and natural barriers, nonreliance on active institutional controls after closure, passive controls after closure, natural resource areas, and design of disposal systems to allow future recovery of wastes.

The guidelines will be revised as necessary after the adoption of final regulations by the EPA.

The implementation of 40 CFR Part 191, Subpart B is required by 10 CFR 60.112. 10 CFR 60.113 establishes minimum conditions to be met for engineered components and ground-water flow; specifically: (1) Containment of radioactive waste within the waste packages will be substantially complete for a period to be determined by the NRC taking into account the factors specified in 10 CFR 60.113(b) provided that such period shall be not less than 300 years nor more than 1,000 years after permanent closure of the geologic repository; (2) the release rate of any radionuclide from the engineered barrier system following the containment period shall not exceed one part in 100,000 per year of the inventory of that radionuclide calculated to be present at 1,000 years following permanent closure, or such other fraction of the inventory as may be approved or specified by the NRC, provided that this requirement does not apply to any radionuclide which is released at a rate less than 0.1% of the calculated total release rate limit. The calculated total release rate limit shall be taken to be one part in 100,000 per year of the inventory of radioactive waste originally emplaced in the underground facility that remains after 1,000 years of radioactive decay; and (3) the geologic repository shall be located so that pre-waste-emplacement ground-water travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1,000 years or such other travel time as may be approved or specified by the NRC.

The guidelines will be revised as necessary to ensure consistency with 10 CFR Part 60.

## Appendix II—NRC and EPA Requirements for Preclosure Repository Performance

Under proposed 40 CFR Part 191, Subpart A—*Environmental Standards for Management and Storage*, Section 191.03, "Standards for Normal Operations", specifies: (1) That operations should be conducted so as to reduce exposure to members of the public to the extent reasonably achievable, taking into account technical, social, and economic considerations; and (2) that, except for variances permitted for unusual operations under Section 191.04 as an upper limit, normal operations shall be conducted in such a manner as to provide reasonable assurance that the combined annual dose equivalent to any member of the public due to (i) operations covered by 40 CFR Part 190, (ii) planned discharges of radioactive material to the general environment from operations covered by this Subpart, and (iii) direct radiation from these operations, shall not exceed 25 millirems to the whole body, 75 millirems to the thyroid, or 25 millirems to any other organ.

The guidelines will be revised as necessary after the adoption of final regulations by the EPA.

The implementation of 40 CFR Part 191, Subpart A and 10 CFR Part 20 is required by 10 CFR 60.111. 10 CFR 60.111 also specifies requirements for waste retrieval, if necessary, including considerations of design, backfilling, and schedule. 10 CFR Part 20 establishes (a) exposure limits for operating personnel and (b) permissible concentrations of radionuclides in uncontrolled areas for air and water. The latter are generally less restrictive than 40 CFR 191, Subpart A, but may be limiting under certain conditions (i.e., if used as a maximum for short durations rather than annual averages).

The guidelines will be revised as necessary to ensure consistency with 10 CFR Part 60.

## Appendix III—Application of the System and Technical Guidelines During the Siting Process

1. This appendix presents a table that specifies how the guidelines of Subparts C and D are to be applied at the principal decision points of the siting process. The decision points, as referenced in the table, are defined as follows:

"Potentially acceptable" means the decision point at which a site is identified as potentially acceptable.

"Nomination and recommendation" means the decision point at which a site is nominated as suitable for characterization or recommended as a candidate site for characterization.

"Repository site selection" means the decision point at which a site is recommended for the development of a repository.

2. The findings resulting from the application of a disqualifying condition for any particular guideline at a given decision point are denoted in the table by the numeral 1 or 2. The numerals 1 and 2 signify the types of findings that are required and are defined as follows:

"1" means *either* of the following:

(a) The evidence does *not* support a finding that the site is disqualified.

or

(b) The evidence supports a finding that the site is disqualified.

"2" means *either* of the following:

(a) The evidence supports a finding that the site is *not* disqualified on the basis of that evidence and is *not* likely to be disqualified.

or

(b) The evidence supports a finding that the site is disqualified or is likely to be disqualified.

3. The findings resulting from the application of a qualifying condition for any particular guideline at a given decision point are denoted in the table by the numeral 3 or 4. The numerals 3 and 4 signify the types of findings that are required and are defined as follows:

"3" means *either* of the following:

(a) The evidence does *not* support a finding that the site is *not* likely to meet the qualifying condition.

or

(b) The evidence supports a finding that the site is *not* likely to meet the qualifying condition, and therefore the site is disqualified.

"4" means *either* of the following:

(a) The evidence supports a finding that the site meets the qualifying condition and is likely to continue to meet the qualifying condition.

or

(b) The evidence supports a finding that the site cannot meet the qualifying condition or is unlikely to be able to meet the qualifying condition, and therefore the site is disqualified.

4. If performance assessments are used to substantiate any of the above findings, those assessments shall include estimates of the effects of uncertainties in data and modeling.

5. For both the disqualifying and qualifying conditions of any guideline, a higher finding (e.g., a "2" finding rather than "1") shall be made if there is sufficient evidence to support such a finding.

FINDINGS RESULTING FROM THE APPLICATION OF THE QUALIFYING AND DISQUALIFYING CONDITIONS OF THE TECHNICAL GUIDELINES AT MAJOR SITING DECISIONS

| Section 960 | Guideline | Condition | Siting decision | | |
|---|---|---|---|---|---|
| | | | Potentially acceptable | Nomination and recommendation | Repository site selection |
| 4-1(a) | System | Qualifying | | 3 | 4 |
| 4-2-1(a) | Geohydrology | do | | 3 | 4 |
| 4-2-1(d) | do | Disqualifying | | 1 | 2 |
| 4-2-2(a) | Geochemistry | Qualifying | | 3 | 4 |
| 4-2-3(a) | Rock Characteristics | do | | 3 | 4 |
| 4-2-4(a) | Climatic Changes | do | | 3 | 4 |
| 4-2-5(a) | Erosion | do | | 3 | 4 |
| 4-2-5(d) | do | Disqualifying | 1 | 1 | 2 |
| 4-2-6(a) | Dissolution | Qualifying | | 3 | 4 |
| 4-2-6(d) | do | Disqualifying | 1 | 1 | 2 |
| 4-2-7(a) | Tectonics | Qualifying | | 3 | 4 |
| 4-2-7(d) | do | Disqualifying | 1 | 1 | 2 |
| 4-2-8-1(a) | Natural Resources | Qualifying | | 3 | 4 |
| 4-2-8-1(d)(1) | do | Disqualifying | 1 | 1 | 2 |
| 4-2-8-1(d)(2) | do | do | | 1 | 2 |
| 4-2-8-2(a) | Site Ownership and Control | Qualifying | | 3 | 4 |
| 5-1(a)(1) | System | do | | 3 | 4 |
| 5-1(a)(2) | do | do | | 3 | 4 |
| 5-1(a)(3) | do | do | | 3 | 4 |
| 5-2-1(a) | Population Density and Distribution | do | | 3 | 4 |
| 5-2-1(d)(1) | do | Disqualifying | 1 | 1 | 2 |
| 5-2-1(d)(2) | do | do | 1 | 1 | 2 |
| 5-2-1(d)(3) | do | do | | 1 | 2 |
| 5-2-2(a) | Site Ownership and Control | Qualifying | | 3 | 4 |
| 5-2-3(a) | Meteorology | do | | 3 | 4 |
| 5-2-4(a) | Offsite Installations and Operations | do | | 3 | 4 |
| 5-2-4(d) | do | Disqualifying | 1 | 1 | 2 |
| 5-2-5(a) | Environmental Quality | Qualifying | | 3 | 4 |
| 5-2-5(d)(1) | do | Disqualifying | | 1 | 2 |
| 5-2-5(d)(2) | do | do | 1 | 1 | 2 |
| 5-2-5(d)(3) | do | do | 1 | 1 | 2 |
| 5-2-6(a) | Socioeconomic Impacts | Qualifying | | 3 | 4 |
| 5-2-6(d) | do | Disqualifying | | 1 | 2 |
| 5-2-7(a) | Transportation | Qualifying | | 3 | 4 |

FINDINGS RESULTING FROM THE APPLICATION OF THE QUALIFYING AND DISQUALIFYING CONDITIONS OF THE TECHNICAL GUIDELINES AT MAJOR SITING DECISIONS—Continued

| Section 960 | Guideline | Condition | Siting decision | | |
|---|---|---|---|---|---|
| | | | Potentially acceptable | Nomination and recommendation | Repository site selection |
| 5-2-8(a) | Surface Characteristics | do | | 3 | 4 |
| 5-2-9(a) | Rock Characteristics | do | | 3 | 4 |
| 5-2-9(d) | do | Disqualifying | | 1 | 2 |
| 5-2-10(a) | Hydrology | Qualifying | | 3 | 4 |
| 5-2-10(d) | do | Disqualifying | | 1 | 2 |
| 5-2-11(a) | Tectonics | Qualifying | | 3 | 4 |
| 5-2-11(d) | do | Disqualifying | 1 | 1 | 2 |

## APPENDIX IV—TYPES OF INFORMATION FOR THE NOMINATION OF SITES AS SUITABLE FOR CHARACTERIZATION

The types of information specified below are those that the DOE expects will be included in the evidence used for evaluations and applications of the guidelines of Subparts C and D at the time of nomination of a site as suitable for characterization. The types of information listed under each guideline are considered to be the most significant for the evaluation of that guideline. However, the types of information listed under any particular guideline will be used, as necessary, for the evaluation of any other guideline. As stated in § 960.3-1-4-2, the DOE will use technically conservative assumptions or extrapolations of regional data, where necessary, to supplement this information. The information specified below will be supplemented with conceptual models, as appropriate, and analyses of uncertainties in the data.

Before site-characterization studies and related nongeologic data gathering activities, the evidence is not expected to provide precise information, but, rather, to provide a reasonable basis for assessing the merits or shortcomings of the site against the guidelines of Subparts C and D. Consequently, the types of information described below should be interpreted so as to accommodate differences among sites and differences in the information acquired before detailed studies.

The specific information required for the guideline applications set forth in Appendix III of this Part is expected to differ from site to site because of site-specific factors, both with regard to favorable and potentially adverse conditions and with regard to the sources and reliability of the information. The types of information specified in this appendix will be used except where the findings set forth in Appendix III of this part can be arrived at by reasonable alternative means or the information is not required for the particular site.

### *Section 960.4-2-1 Geohydrology.*

Description of the geohydrologic setting of the site, in context with its geologic setting, in order to estimate the pre-waste-emplacement ground-water flow conditions. The types of information to support this description should include—

- Location and estimated hydraulic properties of aquifers, confining units, and aquitards.
- Potential areas and modes of recharge and discharge for aquifers.
- Regional potentiometric surfaces of aquifers.
- Likely flow paths from the repository to locations in the expected accessible environment, as based on regional data.
- Preliminary estimates of ground-water travel times along the likely flow paths from the repository to locations in the expected accessible environment.
- Current use of principal aquifers and State or local management plans for such use.

### *Section 960.4-2-2 Geochemistry.*

Description of the geochemical and hydrochemical conditions of the host rock, of the surrounding geohydrologic units, and along likely ground-water paths to locations in the expected accessible environment, in order to estimate the potential for the migration of radionuclides. The types of information to support this description should include—

- Petrology of the rocks.
- Mineralogy of the rocks and general characteristics of fracture fillings.
- Geochemical and mechanical stability of the minerals under expected repository conditions.
- General characteristics of the ground-water chemistry (e.g., reducing/oxidizing conditions and the principal ions that may affect the waste package or radionuclide behavior).

- Geochemical properties of minerals as related to radionuclide transport.

### *Section 960.4-2-3 Rock characteristics.*

Description of the geologic and geomechanical characteristics of the site, in context with the geologic setting, in order to estimate the capability of the host rock and surrounding rock units to accommodate the thermal, mechanical, chemical, and radiation stresses expected to be induced by repository construction, operation, and closure and by expected interactions among the waste, host rock, ground-water, and engineered components of the repository system. The types of information to support this description should include—

- Approximate geology and stratigraphy of the site, including the depth, thickness, and lateral extent of the host rock and surrounding rock units.
- Approximate structural framework of the rock units and any major discontinuities identified from core samples.
- Approximate thermal, mechanical, and thermomechanical properties of the rocks, with consideration of the effects of time, stress, temperature, dimensional scale, and any major identified structural discontinuities.
- Estimates of the magnitude and direction of in situ stress and of temperature in the host rock and surrounding rock units.

### *Section 960.4-2-4 Climatic changes.*

Description of the climatic conditions of the site region, in context with global and regional patterns of climatic changes during the Quaternary Period, in order to project likely future changes in climate such that potential impacts on the repository can be estimated. The types of information to support this description should include—

- Expected climatic conditions and cycles, based on extrapolation of climates during the Quaternary Period.
- Geomorphology of the site region and evidence of changes due to climatic changes.
- Estimated effects of expected climatic cycles on the surface-water and the ground-water systems.

### *Section 960.4-2-5 Erosion.*

Description of the structure, stratigraphy, and geomorphology of the site, in context with the geologic setting, in order to estimate the depth of waste emplacement and the likelihood for erosional processes to uncover the waste in less than one million years. The types of information to support this description should include—

- Depth, thickness, and lateral extent of the host rock and the overlying rock units.
- Lithology of the stratigraphic units above the host rock.
- Nature and rates of geomorphic processes during the Quaternary Period.

### *Section 960.4-2-6 Dissolution.*

Description of the stratigraphy, structure, hydrology, and geochemistry of the site, in context with the geologic setting, to delineate the approximate limits of subsurface rock dissolution, if any. This description should include such information as the following:

- The stratigraphy of the site, including rock units largely comprised of water-soluble minerals.
- The approximate extent and configuration of features indicative of dissolution within the geologic setting.

### *Section 960.4-2-7 Tectonics.*

Description of the tectonic setting of the site, in context with its geologic setting, in order to project the tectonic stability of the site over the next 10,000 years and to identify tectonic features and processes that could be reasonably expected to have a potentially adverse effect on the performance of the repository. The types of information to support this description should include—

- The tectonic history and framework of the geologic setting and the site.
- Quaternary faults in the geologic setting, including their length, displacement, and any information regarding the age of latest movement.
- Active tectonic processes, such as uplift, diapirism, tilting, subsidence, faulting, and volcanism.
- Estimate of the geothermal gradient.
- Estimate of the regional in situ stress field.
- The historical seismicity of the geologic setting.

### *Section 960.4-2-8 Human interference.*

### *Section 960.4-2-8-1 Natural resources.*

Description of the mineral and energy resources of the site, in order to project whether past or future exploration and recovery could have a potentially adverse effect on the performance of the repository. The types of information to support this description should include—

- Known occurrences of energy and mineral resources, including ground water.
- Estimates of the present and projected value of these resources compared with resources contained in other areas of similar size in the geologic setting.
- Past and present drilling and mining operations in the vicinity of the site.

### *Section 960.4-2-8-2 Site ownership and control.*

Description of the ownership of land for the geologic-repository operations area and the controlled area, in order to evaluate whether the DOE can obtain ownership of, and control access to, the site. The types of information to support this description should include—

- Present land ownership.

### *Section 960.5-2-1 Population density and distribution.*

Description of the population density and distribution of the site region, in order to identify highly populated areas and the nearest 1 mile by 1 mile area having a population greater than 1,000 persons. The types of information to support this description should include—

- The most-recent U.S. census, including population composition, distribution, and density.

### *Section 960.5-2-2 Site ownership and control.*

Description of current ownership of land, including surface and subsurface mineral and water rights, in order to evaluate whether the DOE can obtain control of land within the projected restricted area. The types of information to support this description should include—

- Present land ownership.

### *Section 960.5-2-3 Meteorology.*

The meteorological setting, as determined from the closest recording station, in order to project meteorological conditions during repository operation and closure and their potential effects on the transport of airborne emissions. The types of information to support this description should include—

- Wind and atmospheric-dispersion characteristics.
- Precipitation characteristics.
- Extreme weather phenomena.

### *Section 960.5-2-4 Offsite installations and operations.*

Description of offsite installations and operations in the vicinity of the site in order to estimate their projected effects on repository construction, operation, or closure. The types of information to support this description should include—

- Location and nature of nearby industrial, transportation, and military installations and operations, including atomic energy defense activities.

### *Section 960.5-2-5 Environmental quality.*

Description of environmental conditions in order to estimate potential impacts on public health and welfare and on environmental quality. The types of information to support this description should include—

- Applicable Federal, State, and local procedural and substantive environmental requirements.
- Existing air quality and trends.
- Existing surface-water and ground-water quality and quantity.
- Existing land resources and uses.
- Existing terrestrial and aquatic vegetation and wildlife.
- Location of any identified critical habitats for threatened or endangered species.
- Existing aesthetic characteristics.
- Location of components of the National Park System, the National Wildlife Refuge System, the National Wild and Scenic Rivers System, the National Wilderness Preservation System, or National Forest Land.
- Location of significant State or regional protected resource areas, such as State parks, wildlife areas, or historical areas.
- Location of significant Native American resources such as major Indian religious sites, or other sites of unique cultural interest.

### *Section 960.5-2-6 Socioeconomic impacts.*

Description of the socioeconomic conditions of the site, including population density and distribution, economics, community services and facilities, social conditions, and fiscal and government structure, in order to estimate the impacts that might result from site characterization and from the development of a repository at that site. The types of information to support this description should include—

- Population composition, density, and distribution.
- Economic base and economic activity, including major sectors of local economy.
- Employment distribution and trends by economic sector.
- Resource usage.
- Community services and infrastructure, including trends in use and current capacity utilization.
- Housing supply and demand.
- Life style and indicators of the quality of life.
- Existing social problems.
- Sources of, and trends in, local government expenditures and revenues.

### *Section 960.5-2-7 Transportation.*

Description of the transportation facilities in the vicinity of the site in order to evaluate existing or required access routes or improvements. The types of information to support this description should include—

- Estimates of the overall cost and risk of transporting waste to the site.

- Description of the road and rail network between the site and the nearest Interstate highways and major rail lines, also, description of the waterway system, if any.
- Analyses of the adequacy of the existing regional transportation network to handle waste shipments; the movement of supplies for repository construction, operation, and closure; removal of nonradioactive waste from the site, and the transportation of the labor force.
- Improvements anticipated to be required in the transportation network and their feasibility, cost, and environmental impacts.
- Compatibility of the required transportation network improvements with the local and regional transportation and land-use plans.
- Analysis of weather impacts on transportation.
- Analysis of emergency response requirements and capabilities related to transportation.

*Section 960.5-2-8 Surface characteristics.*

Description of the surface characteristics of the site, in order to evaluate whether repository construction, operation, and closure are feasible on the basis of site characteristics that influence those activities. The types of information to support this description should include—

- Topography of the site.
- Existing and planned surface bodies of water.
- Definition of areas of landslides and other potentially unstable slopes, poorly drained material, or materials of low bearing strength or of high liquefaction potential.

*Section 960.5-2-9 Rock characteristics.*

Description of the geologic and geomechanical characteristics of the site, in context with the geologic setting, in order to project the capability of the host rock and the surrounding rock units to provide the space required for the underground facility and safe underground openings during repository construction, operation, and closure. The types of information to support this description should include—

- Depth, thickness, and lateral extent of the host rock.
- Stratigraphic and structural features within the host rock and adjacent rock units.
- Thermal, mechanical, and thermomechanical properties and constructibility characteristics of the rocks, with consideration of the effects of time, stress, temperature, dimensional scale, and any major identified structural discontinuities.
- Fluid inclusions and gas content in the host rock.
- Estimates of the magnitude and direction of in situ stress and of temperature in the host rock.

*Section 960.5-2-10 Hydrology.*

Description of the hydrology of the site, in context with its geologic setting, in order to project compatibility with repository construction, operation, and closure. The types of information to support this description should include—

- Surface-water systems, including recharge and runoff characteristics, and potential for flooding of the repository.
- Nature and location of aquifers, confining units, and aquitards.
- Potentiometric surfaces of aquifers.
- Hydraulic properties of geohydrologic units.

*Section 960.5-2-11 Tectonics.*

Description of the tectonic setting of the site, in context with the regional setting, in order to estimate any expected effects of tectonic activity on repository construction, operation, or closure. The types of information to support this description should include—

- Quaternary faults.
- Active tectonic processes.
- Preliminary estimates of expected ground motion caused by the maximum potential earthquake within the geologic setting.

# PART 961—STANDARD CONTRACT FOR DISPOSAL OF SPENT NUCLEAR FUEL AND/OR HIGH-LEVEL RADIOACTIVE WASTE

## Subpart A—General

Sec.

961.1 Purpose.
961.2 Applicability.
961.3 Definitions.
961.4 Deviations.
961.5 Federal agencies.

## Subpart B—Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste

961.11 Text of the contract.

Authority: Sec. 644, Pub. L. 95-91, 91 Stat. 599 (42 U.S.C. 7254) and sec. 302, Pub. L. 97-425, 96 Stat. 2257 (42 U.S.C. 10222).

Source: 48 FR 16599, Apr. 18, 1983, unless otherwise noted.

logic, hydrologic, and geochemical systems of the region in which a geologic repository operations area is or may be located. The geologic repository operations area plus the portion of the geologic setting that provides isolation of the radioactive waste make up the *geologic repository*.

(d) *Stages in the licensing process.* There are several stages in the licensing process. The *site characterization stage*, though begun before submission of a license application, may result in consequences requiring evaluation in the license review. The *construction stage* would follow, after issuance of a construction authorization. A *period of operations* follows the issuance of a license by the Commission. The period of operations includes the time during which *emplacement* of wastes occurs; any subsequent period before permanent closure during which the emplaced wastes are *retrievable*; and *permanent closure*, which includes sealing of shafts. Permanent closure represents the end of active human intervention with respect to the engineered barrier system.

(e) *Isolation of waste.* (1) During the first several hundred years following permanent closure of a geologic repository, when radiation and thermal levels are high and the uncertainties in assessing repository performance are large, special emphasis is placed upon the ability to contain the wastes by waste packages within an *engineered barrier system*. This is known as the *containment period*. The *engineered barrier system* includes the waste packages and the underground facility. A *waste package* is composed of the waste form and any containers, shielding, packing, and absorbent materials immediately surrounding an individual waste container. The *underground facility* means the underground structure, including openings and backfill materials, but excluding, shafts, boreholes, and their seals.

(2) Following the containment period special emphasis is placed upon the ability to achieve isolation of the wastes by virtue of the characteristics of the geologic repository. The engineered barrier system works to control the release of radioactive material to the geologic setting and the geologic setting works to control the release of radioactive material to the accessible environment. *Isolation* means inhibiting the transport of radioactive material so that amounts and concentrations of the materials entering the accessible environment will be kept within prescribed limits.

## PERFORMANCE OBJECTIVES

### § 60.111 Performance of the geologic repository operations area through permanent closure.

(a) *Protection against radiation exposures and releases of radioactive material.* The geologic repository operations area shall be designed so that until permanent closure has been completed, radiation exposures and radiation levels, and releases of radioactive materials to unrestricted areas, will at all times be maintained within the limits specified in Part 20 of this chapter and such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency.

(b) *Retrievability of waste.* (1) The geologic repository operations area shall be designed to preserve the option of waste retrieval throughout the period during which wastes are being emplaced and, thereafter, until the completion of a preformance confirmation program and Commission review of the information obtained from such a program. To satisfy this objective, the geologic repository operations area shall be designed so that any or all of the emplaced waste could be retrieved on a reasonable schedule starting at any time up to 50 years after waste emplacement operations are initiated, unless a different time period is approved or specified by the Commission. This different time period may be established on a case-by-case basis consistent with the emplacement schedule and the planned performance confirmation program.

(2) This requirement shall not preclude decisions by the Commission to allow backfilling part or all of, or permanent closure of, the geologic repository operations area prior to the end of the period of design for retrievability.

(3) For purposes of this paragraph, a reasonable schedule for retrieval is one that would permit retrieval in about the same time as that devoted to construction of the geologic repository operations area and the emplacement of wastes.

### § 60.112 Overall system performance objective for the geologic repository after permanent closure.

The geologic setting shall be selected and the engineered barrier system and the shafts, boreholes and their seals shall be designed to assure that releases of radioactive materials to the accessible environment following permanent closure conform to such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency with respect to both anticipated processes and events and unanticipated processes and events.

### § 60.113 Performance of particular barriers after permanent closure.

(a) *General provisions*—(1) *Engineered barrier system.* (i) The engineered barrier system shall be designed so that assuming anticipated processes and events: (A) Containment of HLW will be substantially complete during the period when radiation and thermal conditions in the engineered barrier system are dominated by fission product decay; and (B) any release of radionuclides from the engineered barrier system shall be a gradual process which results in small fractional releases to the geologic setting over long times. For disposal in the saturated zone, both the partial and complete filling with groundwater of available void spaces in the underground facility shall be appropriately considered and analysed among the anticipated processes and events in designing the engineered barrier system.

(ii) In satisfying the preceding requirement, the engineered barrier system shall be designed, assuming anticipated processes and events, so that:

(A) Containment of HLW within the waste packages will be substantially complete for a period to be determined by the Commission taking into account the factors specified in § 60.113(b) provided, that such period shall be not less than 300 years nor more than 1,000 years after permanent closure of the geologic repository; and

(B) The release rate of any radionuclide from the engineered barrier system following the containment period shall not exceed one part in 100,000 per year of the inventory of that radionuclide calculated to be present at 1,000 years following permanent closure, or such other fraction of the inventory as may be approved or specified by the Commission; provided, that this requirement does not apply to any radionuclide which is released at a rate less than 0.1% of the calculated total release rate limit. The calculated total release rate limit shall be taken to be one part in 100,000 per year of the inventory of radioactive waste, originally emplaced in the underground facility, that remains after 1,000 years of radioactive decay.

(2) *Geologic setting.* The geologic repository shall be located so that pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1,000 years or such other travel time as may be approved or specified by the Commission.

(b) On a case-by-case basis, the Commission may approve or specify some other radionuclide release rate, designed containment period or pre-waste-emplacement groundwater travel time, provided that the overall system performance objective, as it relates to anticipated processes and events, is satisfied. Among the factors that the Commission may take into account are:

(1) Any generally applicable environmental standard for radioactivity established by the Environmental Protection Agency;

(2) The age and nature of the waste, and the design of the underground facility, particularly as these factors bear upon the time during which the thermal pulse is dominated by the decay heat from the fission products;

(3) The geochemical characteristics of the host rock, surrounding strata and groundwater; and

(4) Particular sources of uncertainty in predicting the performance of the geologic repository.

(c) Additional requirements may be found to be necessary to satisfy the overall system performance objective as it relates to unanticipated processes and events.

### LAND OWNERSHIP AND CONTROL

### § 60.121 Requirements for ownership and control of interests in land.

(a) *Ownership of land.* (1) Both the geologic repository operations area and the controlled area shall be located in and on lands that are either acquired lands under the jurisdiction and control of DOE, or lands permanently withdrawn and reserved for its use.

(2) These lands shall be held free and clear of all encumbrances, if significant, such as: (i) Rights arising under the general mining laws; (ii) easements for right-of-way; and (iii) all other rights arising under lease, rights of entry, deed, patent, mortgage, appropriation, prescription, or otherwise.

(b) *Additional controls.* Appropriate controls shall be established outside of the controlled area. DOE shall exercise any jurisdiction and control over surface and subsurface estates necessary to prevent adverse human actions that could significantly reduce the geologic repository's ability to achieve isolation. The rights of DOE may take the form of appropriate possessory interests, servitudes, or withdrawals from location or patent under the general mining laws.

(c) *Water rights.* (1) DOE shall also have obtained such water rights as may be needed to accomplish the purpose of the geologic repository operations area.

(2) Water rights are included in the additional controls to be established under paragraph (b) of this section.

### SITING CRITERIA

### § 60.122 Siting criteria.

(a)(1) A geologic setting shall exhibit an appropriate combination of the conditions specified in paragraph (b) of this section so that, together with the engineered barriers system, the favorable conditions present are sufficient to provide reasonable assurance that the performance objectives relating to isolation of the waste will be met.

(2) If any of the potentially adverse conditions specified in paragraph (c) of this section is present, it may compromise the ability of the geologic repository to meet the performance objectives relating to isolation of the waste. In order to show that a potentially adverse condition does not so compromise the performance of the geologic repository the following must be demonstrated:

(i) The potentially adverse human activity or natural condition has been adequately investigated, including the extent to which the condition may be present and still be undetected taking into account the degree of resolution achieved by the investigations; and

(ii) The effect of the potentially adverse human activity or natural condition on the site has been adequately evaluated using analyses which are sensitive to the potentially adverse human activity or natural condition and assumptions which are not likely to underestimate its effect; and

(iii)(A) The potentially adverse human activity or natural condition is shown by analysis pursuant to paragraph (a)(2)(ii) of this section not to affect significantly the ability of the geologic repository to meet the performance objectives relating to isolation of the waste, or

(B) The effect of the potentially adverse human activity or natural condition is compensated by the presence of a combination of the favorable characteristics so that the performance objectives relating to isolation of the waste are met, or

(C) The potentially adverse human activity or natural condition can be remedied.

(b) *Favorable conditions.* (1) The nature and rates of tectonic, hydrogeologic, geochemical, and geomorphic processes (or any of such processes) operating within the geologic setting during the Quaternary Period, when projected, would not affect or would favorably affect the ability of the geologic repository to isolate the waste.

(2) For disposal in the saturated zone, hydrogeologic conditions that provide:

(i) A host rock with low horizontal and vertical permeability;

(ii) Downward or dominantly horizontal hydraulic gradient in the host rock and immediately surrounding hydrogeologic units; and

(iii) Low vertical permeability and low hydraulic gradient between the host rock and the surrounding hydrogeologic units.

(3) Geochemical conditions that:

(i) Promote precipitation or sorption of radionuclides;

(ii) Inhibit the formation of particulates, colloids, and inorganic and organic complexes that increase the mobility of radionuclides; or

(iii) Inhibit the transport of radionuclides by particulates, colloids, and complexes.

(4) Mineral assemblages that, when subjected to anticipated thermal loading, will remain unaltered or alter to mineral assemblages having equal or increased capacity to inhibit radionuclide migration.

(5) Conditions that permit the emplacement of waste at a minimum depth of 300 meters from the ground surface. (The ground surface shall be deemed to be the elevation of the lowest point on the surface above the disturbed zone.)

(6) A low population density within the geologic setting and a controlled area that is remote from population centers.

(7) Pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years.

(8) For disposal in the unsaturated zone, hydrogeologic conditions that provide—

(i) Low moisture flux in the host rock and in the overlying and underlying hydrogeologic units;

(ii) A water table sufficiently below the underground facility such that fully saturated voids contiguous with the water table do not encounter the underground facility;

(iii) A laterally extensive low-permeability hydrogeologic unit above the host rock that would inhibit the downward movement of water or divert downward moving water to a location beyond the limits of the underground facility;

(iv) A host rock that provides for free drainage; or

(v) A climatic regime in which the average annual historic precipitation is a small percentage of the average annual potential evapotranspiration.

(c) *Potentially adverse conditions.* The following conditions are potentially adverse conditions if they are characteristic of the controlled area or may affect isolation within the controlled area.

(1) Potential for flooding of the underground facility, whether resulting from the occupancy and modification of floodplains or from the failure of existing or planned man-made surface water impoundments.

(2) Potential for foreseeable human activity to adversely affect the groundwater flow system, such as groundwater withdrawal, extensive irrigation, subsurface injection of fluids, underground pumped storage, military activity or construction of large scale surface water impoundments.

(3) Potential for natural phenomena such as landslides, subsidence, or volcanic activity of such a magnitude that large-scale surface water impoundments could be created that could change the regional groundwater flow system and thereby adversely affect the performance of the geologic repository.

(4) Structural deformation, such as uplift, subsidence, folding, or faulting that may adversely affect the regional groundwater flow system.

(5) Potential for changes in hydrologic conditions that would affect the migration of radionuclides to the accessible environment, such as changes in hydraulic gradient, average interstitial velocity, storage coefficient, hydraulic conductivity, natural recharge, potentiometric levels, and discharge points.

(6) Potential for changes in hydrologic conditions resulting from reasonably foreseeable climatic changes.

(7) Groundwater conditions in the host rock, including chemical composition, high ionic strength or ranges of

Eh-pH, that could increase the solubility or chemical reactivity of the engineered barrier system.

(8) Geochemical processes that would reduce sorption of radionuclides, result in degradation of the rock strength, or adversely affect the performance of the engineered barrier system.

(9) Groundwater conditions in the host rock that are not reducing.

(10) Evidence of dissolutioning such as breccia pipes, dissolution cavities, or brine pockets.

(11) Structural deformation such as uplift, subsidence, folding, and faulting during the Quaternary Period.

(12) Earthquakes which have occurred historically that if they were to be repeated could affect the site significantly.

(13) Indications, based on correlations of earthquakes with tectonic processes and features, that either the frequency of occurrence or magnitude of earthquakes may increase.

(14) More frequent occurrence of earthquakes or earthquakes of higher magnitude than is typical of the area in which the geologic setting is located.

(15) Evidence of igneous activity since the start of the Quaternary Period.

(16) Evidence of extreme erosion during the Quaternary Period.

(17) The presence of naturally occurring materials, whether identified or undiscovered, within the site, in such form that:

(i) Economic extraction is currently feasible or potentially feasible during the foreseeable future; or

(ii) Such materials have greater gross value or net value than the average for other areas of similar size that are representative of and located within the geologic setting.

(18) Evidence of subsurface mining for resources within the site.

(19) Evidence of drilling for any purpose within the site.

(20) Rock or groundwater conditions that would require complex engineering measures in the design and construction of the underground facility or in the sealing of boreholes and shafts.

(21) Geomechanical properties that do not permit design of underground opening that will remain stable through permanent closure.

(22) Potential for the water table to rise sufficiently so as to cause saturation of an underground facility located in the unsaturated zone.

(23) Potential for existing or future perched water bodies that may saturate portions of the underground facility or provide a faster flow path from an underground facility located in the unsaturated zone to the accessible environment.

(24) Potential for the movement of radionuclides in a gaseous state through air-filled pore spaces of an unsaturated geologic medium to the accessible environment.

[48 FR 28222, June 21, 1983, as amended at 50 FR 29647, July 22, 1985]

## DESIGN CRITERIA FOR THE GEOLOGIC REPOSITORY OPERATIONS AREA

### § 60.130 Scope of design criteria for the geologic repository operations area.

Sections 60.131 through 60.134 specify minimum criteria for the design of the geologic repository operations area. These design criteria are not intended to be exhaustive, however. Omissions in §§ 60.131 through 60.134 do not relieve DOE from any obligation to provide such safety features in a specific facility needed to achieve the performance objectives. All design bases must be consistent with the results of site characterization activities.

### § 60.131 General design criteria for the geologic repository operations area.

(a) *Radiological protection.* The geologic repository operations area shall be designed to maintain radiation doses, levels, and concentrations of radioactive material in air in restricted areas within the limits specified in Part 20 of this chapter. Design shall include:

(1) Means to limit concentrations of radioactive material in air;

(2) Means to limit the time required to perform work in the vicinity of radioactive materials, including, as appropriate, designing equipment for ease of repair and replacement and

## STATEMENT OF RELATED CASES

The following cases involve review of various actions of the United States Secretary of Energy, pursuant to § 119 of the Nuclear Waste Policy Act. While all are not directly related, they raise related issues with those presented herein, with which the Court should be aware:

Environmental Policy Institute et al. v. Watkins, Consolidated Cases under Case No. 85-7308

Nevada v. Watkins, No. 86-7309

County of Esmeralda, State of Nevada v. U.S. Department of Energy, No 89-70142

County of Inyo, State of California v. U.S. Department of Energy, No. 89-70162

## CERTIFICATE OF SERVICE

Under penalty of perjury, I hereby certify that I am employed by the Office of the Attorney General of Nevada, and that on the 16th day of May, 1990, I deposited in the U.S. Mail, with postage fully paid, a true and correct copy of PETITIONERS' OPENING BRIEF, EXCERPTS OF RECORD, and APPENDIX addressed as follows:

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